

RADIO AMATEUR

SEPTEMBER 1993
Volume 61 No 9



Journal of the Wireless Institute of Australia



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Cover

KH5 — Kingman Reef is completely submerged except for an 800 foot long gravel bar near the south-east point which averages 10 to 20 feet in width. Doug VESRA is working on a DXpedition antenna. Note the ends of the beam elements extend over the opposite edges of the land! For more information see Stephen Pall's "How's DX" column.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Federal QSP

You may recall seeing an advertisement in the May issue of Amateur Radio for the positions of Company Secretary and Office Manager for the WIA. This was occasioned by the resignation of Bill Roper, the General Manager and Secretary. After a busy round of interviews, these positions have now been filled and Bill has been able to effect his resignation. Elsewhere in this issue you will see some details of Bill's achievements in his time as General Manager, so I won't go into them here in any detail, other than to record my thanks to Bill for a job well done. He leaves this organisation in much better shape than it was when he started in the position and we wish him well in his new endeavours.

The new faces in the Federal Office are Mr Bruce Thorne as Company Secretary and Ms Donna Reilly as Office Manager. We welcome them both and wish them well in their new positions. Having only just recently taken over their positions, they are both feeling their way and becoming accustomed to the culture that is amateur radio. I ask you all to bear with them as they adjust to their situation and come up to speed. In some ways we amateurs are a strange lot and we take some getting used to. However, I am sure that Bruce and Donna will soon be handling the running of the office like veterans.

On another tack, I would like to take up a point raised in a recent Divisional Broadcast. It concerns how we see ourselves and how we wish others to see us. We all take pride in being amateur radio operators — we have passed an examination and we have a certificate to prove that we are eligible to be amateurs. Many of us would like to encourage others to also become amateurs but how many of them are turned off the whole idea when they see the inside of "The Shack".

I must admit that my shack is at times a little on the disorganised side, with the odd cable or two running across the floor. I have seen better shacks than my own, as well as worse ones, some much worse. Have you ever thought about the image you project to others through the look of your shack? After the antenna farm in the back yard, it is probably the next most visible aspect of your operation. All too often we leave the matter of station engineering, and that's what it is, engineering, to another time and somehow it never gets done. Yet while we continue to operate in untidy conditions amongst a rat's nest of cables of assorted types, how are other people going to consider our hobby seriously enough to join. The better the image we can project to those who come to see and know us, the more chance we have of being able to encourage more people to become amateurs. Without a solid and growing body of amateurs it becomes ever more difficult to justify our privileges and band space against the increasing commercial pressures which are coming to bear on the government.

So how about setting yourself a project for the coming months — turn your skills as an amateur to the matter of the engineering of your station and clean up the mess. Turn it into something of which you can be proud and want the world to see. In the process you will certainly make it easier for yourself to operate. Maybe the coming Christmas break would be a good time to start work, after a couple of months of careful planning.

Kevin Olds VK1OK
Federal President

Departure of Bill Roper as General Manager and Secretary

The keen eyed among you will have noted that this issue no longer shows Bill Roper VK3ARZ (now VK3BR) as the General Manager and Secretary of the WIA. After five years in the position, Bill has left to pursue other interests. In his five years in the position Bill has achieved many things, some of which you may be aware. However, to many, some of Bill's achievements will not have been obvious as they have been achieved behind the scenes, often with very little visible result except to the Federal Council.

Bill was already well known to

many amateurs when he commenced work as General Manager and Secretary in the Federal Office in 1988 through his long association with the Federal Tapes as one of the co-presenters. It may be said that he shares the honour of being one of the best known voices in amateur radio through his exposure on weekly broadcasts by means of the Federal Tapes.

When he started in the Federal Office, Bill was faced with an organisation that was run down with very little by way of financial reserves; office procedures were practically

non-existent and very little use was being made of computing assistance in the office tasks. Bill tackled the job with energy and enthusiasm and has been able to achieve a major turnaround in the WIA's fortunes at the Federal level.

The operation and efficiency of the Federal Office have been vastly improved. The office now provides a standard of service that is much appreciated by all those who communicate with the WIA at the federal level. This has been made possible through the introduction of improved office systems, most of them computer-based, and the development of associated procedures and staff training. On the financial front, the WIA is now a viable organisation in the financial sense, with an extensive financial and statistical system in place to support

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers		Weekly News Broadcasts	1993 Fees	
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Secretary Treasurer	Christopher Davis Hugh Blenning Don Hume	VK1DO VK1YYZ VK1DH	3,570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 146.950 MHz FM.	(F) \$70.00 (G) (\$5.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Secretary/ Treasurer (Office hours)	Terry Ryeland Roger Harrison	VK2UX VK2ZTB	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 ('morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10m, 2m, 70cm, 23cm. News headlines by phone (02) 552 5168. Some broadcast text can be found on the Packer network.	(F) \$66.75 (G) (\$5.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashton Vic 3147 Phone (03) 885 9281	President Secretary Treasurer Office hours	Jim Linton Barry Wilton Rob Halley	VK3PC VK3XV VK3XLV	1.840MHz AM, 3.615SSB, 7.065SSB, 53.900FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonards 1030 hrs on Sunday.	(F) \$72.00 (G) (\$5.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Secretary Treasurer	Ross Marren Lance Bickford David Travis	VK4AMJ VK4AZZ VK4ATR	1.825, 3.065, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Relays on 3.605 & 147.150 MHz, 1930 Monday.	(F) \$70.00 (G) (\$5.00 (X) \$42.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Bob Allan Maurie Hooper Bill Wardrop	VK5BJA VK5SEA VK5AWM	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 145.000 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (\$5.00 (X) \$42.00
VK6	Western Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3868	President Secretary Treasurer	Cliff Bastin Bruce Hedland- Thomas	VK6LZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.116, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) \$80.75 (G) (\$5.00 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Secretary Treasurer	Andrew Dixon Ted Beard Peter King	VK7QL VK7EB VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$67.00 (G) (\$5.00 (X) \$39.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to Australian resident (F) (G) (X) grades at fee x 3 times.	

Note: All times are local. All frequencies MHz.

the Federal Council in its deliberations. The improvements in the performance of the office have been accompanied by an improved financial performance that has assisted the financial turnaround.

This financial turnaround has also been evidenced in the area of publications where, through Bill's prudent financial management and hard negotiation, the production costs of Amateur Radio magazine have been contained and actually reduced, despite continuing increases in the CPI. Bill was also instrumental in obtaining from the Australian Government Publishing Service the long term contract for the WIA to publish the Australian Radio Amateur Call Book.

Of a more visible nature, Bill was largely responsible for the improved liaison with the DoTC (now the SMA) which saw the successful negotiation of new and improved licence conditions for the amateur service. These conditions will see Australian amateurs move into an environment which contains far fewer regulations and impediments to the experimental nature of the amateur radio service. The new conditions will be the envy of amateurs worldwide and it is only because of the government calling an election and then establishing the Spectrum Management Agency that these new licence conditions have not come into force before now.

Bill also played a major role in the establishment and operation of the WIA Exam Service, which now provides an examination service to the amateur community and those aspiring to become amateurs, which is second to none. Flexibility in the timing of exams and prompt return of results are an integral part of the system which compares very favourably with those in use overseas.

To Bill we say a big thank you for all you have done in your time in the Federal Office and wish you all the best in your new endeavours.

Kevin Olds VK1OK
Federal President

ar

High Performance 20 Metre Wire Antennas

*Adrian Feli VK2DZF * has had good results with his version of the quad loop and 3/4 wave vertical.*

Described in this article are two simply constructed wire antennas that have proved to be excellent performers for DX communications on the HF bands at the author's QTH. Although these designs are not expected to compete with multi-element types they may surprise many operators with their overall consistently good performance. To simplify construction and to keep costs to a minimum, wire is recommended for the radiating element in the vertical design. Above 14 MHz, tubing can of course be utilized; the choice is yours, the only considerations being mechanical. If you are lucky enough to have a few trees in your property then why not take full advantage and use them to get some easy sky hooks. These designs not only perform extremely well but no special matching networks are required at the feed point, thereby keeping construction simple and costs low.

The Quad Loop

This is probably my favourite antenna for use on the HF bands, although its sheer size may deter some, especially on the lower frequencies. If one can arrange for its construction then they will be rewarded with an antenna that is not only good on transmission, for both local and DX, but is also an excellent receive antenna which is very quiet, with low pickup of manmade and other noise. From experience, the loop has the advantage when it comes to low TVI as well. This is a big plus for the suburban amateur operator. Costs can be kept to a minimum on this antenna by not using spreaders, although at 10 or 15 m it may be much easier to use them anyway. For support, why not make use of any trees and/or the house to get on the air? The shape

doesn't have to be square, but I have stuck with this arrangement as it has proved itself time after time for me.

Construction and Adjustment

In the December 1991 issue of AR, the author described a gamma matched quad loop. That method could be complicated to construct and difficult to adjust when in the air, so this latest design has been simplified somewhat. It is recommended nevertheless that a 75 ohm impedance transformer be used between the loop (feed impedance about 120 ohm) and the 50 ohm coaxial feeder cable, especially if you own a solid state transceiver. This will give an excellent impedance match resulting in an SWR of 1 to 1, if the antenna is well clear of surrounding objects and adjusted correctly.

The 75 ohm cable for the impedance transformer can be obtained from Tandy stores. Their part no is 278 1327. Although this cable isn't the best quality it will do the job if no other 75 ohm cable is available. Once resonance has been established (check where the dip point is), then shorten the loop by say 5 to 7 cm at a time until the dip point is where it is wanted. The loop has a great bandwidth so adjustment isn't that critical, but the antenna should be at its final height if the readings are to be accurate.

It is suggested that the formula $306/F(\text{MHz})$ be used as the starting point for the loop circumference (in metres). Make this calculation for the middle of the band, or towards the low end of the band. This way should allow ample length of wire for adjustments.

If you are sure that the loop will be in the clear, well away from all objects, then you could use the formula $304/F$. Then the calculations should be made for the low end of the band.

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The loop is a balanced antenna, but the feedline is unbalanced. Therefore some RF current will flow on the coax shield because of this unbalanced condition. We can take advantage of this situation by inserting an RF choke one quarter wavelength down from the feedpoint. This section then becomes part of the antenna, causing the normal "figure 8" pattern to be somewhat distorted. This will allow some extra pickup and transmission in directions not normally found with a gamma feed loop in the same position. Tests with both types of feed have confirmed this conclusion. The quarter wave section should drop away at right angles from the loop. The velocity factor of the cable should be allowed

for in determining the quarter wave section length. This will be 0.66 in most cases, but don't worry if you are a little short in length. It's best to use RG58C/U (etc) cable from the transformer to the shack, because of weight (and cost) considerations. If the feedline is very long then use RG213

Although this antenna will perform well at low heights, it will excel if the loop is elevated as high as possible. I have been able to get my 20m loop up to 20m to the top, between two trees — until it came crashing down!

I shall put it up again, I hope, but in the meantime I am having great success with the 3/4 wave vertical.

Performance of Loop

As mentioned earlier, the loop is bi-directional (figure-of-8, bird's eye view) so allow for this before installation. The lobes may be distorted somewhat by design shape, by nearby objects and by height above ground.

With stations that appear in the direction of these lobes of radiation, this loop should outperform the vertical mentioned in the next section, assuming the antenna is located at a reasonable height above the ground. However for signals off the side of the loop, the 3/4 wave vertical should be superior.

So if you have a favourite direction for DX, then try and aim the loop at this point. If you prefer to roam about the bands then the vertical described next may be the best choice. Remember though that the loop is bi-directional so it will beam both long and short paths at the same time.

The 3/4 Wavelength Vertical

To quote the ARRL handbook: "When the height of a vertical antenna is increased beyond a half wavelength, secondary lobes appear in the (vertical) pattern. These become major lobes at relatively high angles when the length approaches 3/4 wavelength".

Despite the above I have found this length of vertical to be an excellent antenna for working DX on the HF bands, particularly 15 and 20 metres. Not only is performance very good but no impedance matching networks are required, thereby making possible a direct connection to low impedance cable.

The antenna will have some gain; it's like having a half wavelength vertical elevated one quarter wavelength above ground. In comparative tests a half wavelength

17'6" (5.33m) per side

Multi-strand wire.
Insulated if in or near trees.

Total Length (see text).

11'5" (3.48m)
75Ω coaxial
transformer
(see text).
Splice joint
RF choke
location
RG58 C/U etc

Solder Contacts

Perspex
etc
Solder
75Ω
Note: Cover joint with
5 minute Araldite

Figure 1 — The Quad Loop Antenna.

or RG8 etc. The loop is an efficient antenna so losses are going to be very low anyway.

The RF choke can be constructed in a number of ways, so first check the junk box and see if there are any toroids about as this will determine how to wind the choke. Figure 2 shows some suggestions for different types. The insertion of the choke will also help stop RF from coming back into the house and causing TVI, so it is important to have it there in some form or another.

If the loop is to be constructed with the intention of rotation, then the RF choke might better be located right at the feed point.

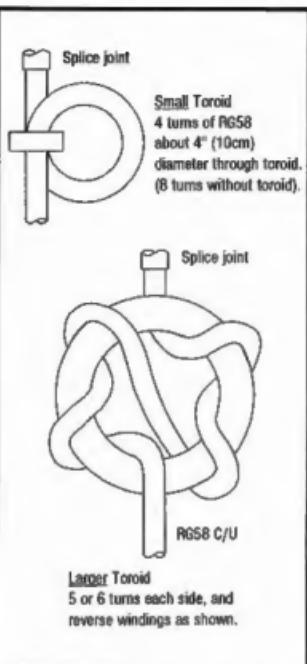


Figure 2 — Alternative RF Chokes for the Quad Loop.

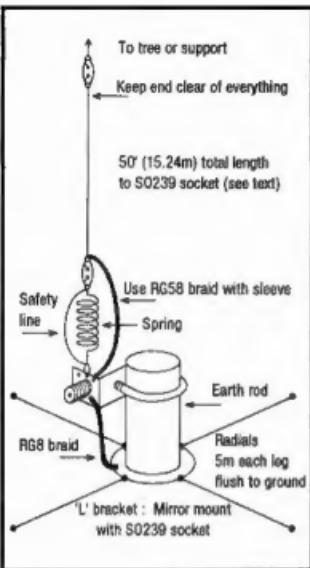


Figure 3 — The 3/4 wave Vertical Antenna.

mounted near the ground performed poorly.

I suggest that the bottom end of any HF half wavelength vertical be at least 1/8 wavelength from the ground. This has been suggested in RSGB antenna publications as well. Unfortunately 3/4 wavelength on 20m makes for an awfully long radiator, but with the use of a few trees it can be done. The top can be bent somewhat, or a little top loading in the form of a capacitance hat added, if getting the height is a problem.

Ground Radials

This antenna will operate at high efficiency with low losses without the need for an elaborate ground system. Four 1/4 wavelength radials buried beneath the grass and a ground rod should do the trick. A spade slot can be made quite easily in damp soil to run the radials. To be fair to any potential constructor of this type of antenna, I should point out that my ground radial system consists of a total of 500 metres of 1mm copper wire. This, together with ground rod was installed prior to laying down the turf in our back yard.

There are various lengths cut to 0.2 to 0.25 wavelengths between 10 and 40 metres, although gardening has cut a lot of these lengths in half over the years! The ground rod at the central point (from where the RG213 runs to the house) is kept moist with occasional water from the hose. So the whole system is a good earth!

Tuning the Vertical

Start with a bit more wire than is required. For 20m, 15.5m should be ample to get started. Minimize the VSWR at your favourite portion of the band by shortening the wire a little at a time and observing the SWR. It should come down to 1 to 1 at resonance. Note though that the band width of this vertical is not as good as the loop.

Performance

From experiments conducted on 15 metres, the vertical should perform the same as a horizontal 1/2 wavelength dipole mounted at 1 wavelength above the ground.

Local stations and near VK states will be down slightly in strength compared to the loop or any similar horizontal antenna. DX on the other hand should easily be worked

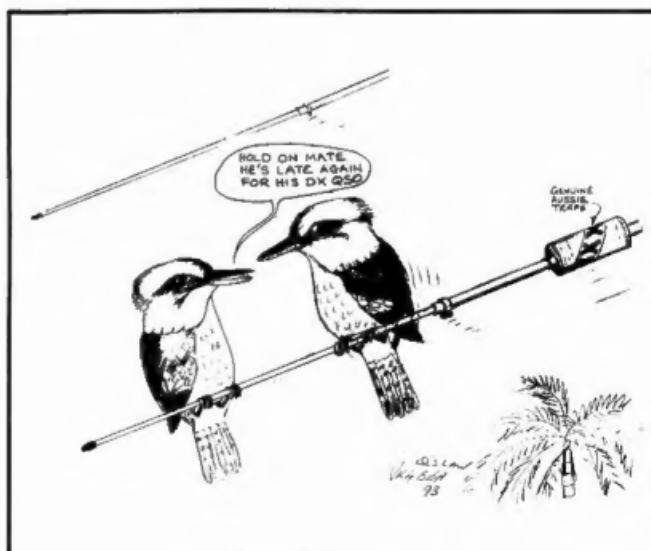


Ground rod and radial for the vertical. Four or more should suffice for the 0.75 wave design.

(especially on CW), but do expect some QRM and QRN because of the omnidirectional pattern. Well — you can't have everything!

* PO Box 344, Baulkham Hills NSW 2153

ar



A Z Match Tuner — Two Coil Windings But No Switching.

Lloyd Butler VK5BR* discusses another Z match tuner idea which gets rid of the two outputs and the output switching.

In recent months, there has been quite a lot of constructing and testing of single coil Z match antenna tuners. Various experimental coil arrangements have been assembled in Melbourne by an enthusiastic radio amateur and these have been sent on to me for technical assessment. The first of these units was based on a tank coil tuning idea submitted by Joe Rogers VK3TO in AR October 1953.

In this particular arrangement, there were two coil windings on a single common coil former but spaced well apart. I pointed out that this was really a two coil design since the windings were not mutually coupled and therefore individual inductors in their own right. From then on, further work was aimed at a unit more closely based on the ZL3QQ single coil system. Notwithstanding this, we were able to get the VK3TO type coil arrangement working as a Z match and I thought that its operation would also be of interest to readers.

The VK3TO Tank Circuit

The circuit arrangement and coil assembly for the VK3TO multi-band tank circuit are shown in figures 1 and 2 respectively. C1-C2 is a split stator capacitor which in conjunction with L1 and L2 form the tank tuning. In essence, the larger coil L1 tunes the 3.5 to 7 MHz bands and the smaller coil L2 tunes the 14 to 28 MHz bands. On the lower frequency bands, L1 couples directly into a link winding L3 to feed the antenna line. On the higher frequency bands, L1 acts as the primary of transformer L1-L3 to couple L2 into the antenna line. As shown in figure 2 the windings are fitted on a common two inch former for convenience but are sufficiently separated that any mutual coupling is small. If required, separate formers could be used. The link output winding L3 is closely fitted over the cold end of L1.

The important feature of interest is that the tank tuning system covers amateur bands from 3.5 to 28 MHz without any switching.

The idea of a tank circuit with two resonant tuning ranges is certainly not new and I found other references in my files. Allen King Jr W1CJL published an article in QST, March 1948 titled "No Turrets — Just Tune".

The important feature of interest is that the tank tuning system covers amateur bands from 3.5 to 28 MHz without any switching.

Vernon Chambers W1JEQ submitted a tank circuit identical to the VK3TO circuit. His article published in QST July 1954, was titled "Single Ended Multiband Tuners". Incidentally, the same Allen King W1CJL is credited with first introducing the well established two coil Z match tuner as we know it (refer QST May 1955).

The Z Match

Now here is where our Melbourne Z match constructor is introduced. He figured that he could use the VK3TO tank circuit as the shunt element of a Z match tuner. The coil assembly

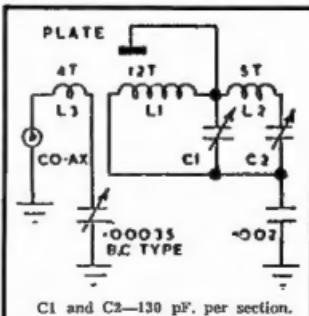


Figure 1 — The VK3TO Multi-Band Tank Tuning Unit (from AR, Oct 1953).

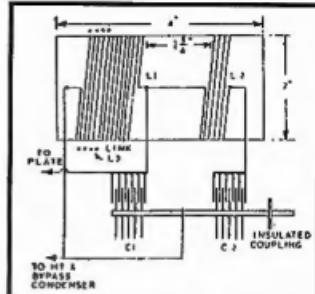


Figure 2 — Assembly — The VK3TO Tuning Unit (from AR, Oct 1953).

was duplicated and it was only a matter of adding the series tuning capacitor connected between the 50 ohm input and the hot end of L1. The next job was to see what it could do and that was my task.

As it turned out the coils had too much inductance for the Z match function and in particular I could not get satisfactory matching on 7 MHz and 28 MHz. In the light of how the Z match works this was understandable. Referring back to our previous articles, we have described the Z match as an L network of series capacitance and shunt inductance. To make the shunt element look like an inductive reactance, the shunt circuit is offset from its resonant point. This is done by reducing either shunt capacitance or shunt inductance. If the resonant point of the two components occurs when the variable capacitor is set near its minimum value, then the inductance must be reduced by reducing the number of turns. This was the case at 7 and 28 MHz and to improve operation, I reduced the 12 turn large coil down to 8 turns and the 5 turn small coil down to 4 turns. The resultant circuit is shown in figure 3.

If you look at a standard two coil Z match circuit and just remove the secondary winding of the smaller coil unit you find exactly the same circuit as we have in figure 3. The calculated inductances for figure 3 are 3.37 microhenries for the large coil and 1.14 microhenries for the small coil. These values are close to those used in the two coil Z match. So we really have a normal two coil Z match with only one output coil and no switch.

Performance

With the coils modified as discussed, I was able to achieve a match to 50 ohms input over the load resistance range of 10 to 2000 ohms for the frequency bands of 3.5, 7, 14 and 21 MHz. At 28 MHz, it would match for 75 ohms upwards. I did not think too many people would want to use a Z match tuner at 28 MHz and I did not try too hard to get a match below 75 ohms. To achieve the matching range, the variable input capacitor requires a capacitance range of 20 to 400 pF and the split stator capacitor a range of 18 to 210 pF.

Referring back to tests I carried out on the Compact Coil or Ronomyous two coil Z match, Amateur Radio, December 1990, we see that, on most bands, outputs coupled from both coils had to be used to obtain a wide impedance load range. Now I have already pointed out that our Z match based on the VK3TO tank is in fact a two coil unit with output coupled from only the larger coil. The conclusion I have to reach is that, by carefully

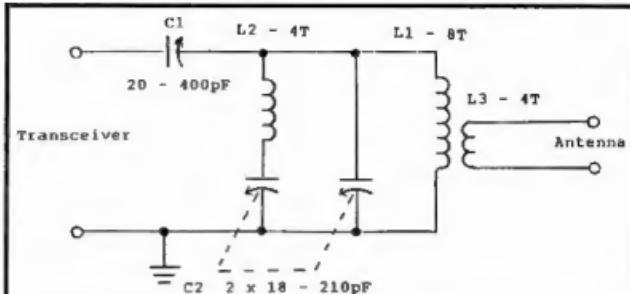


Figure 3 — The Z Match Tuning Unit. Two coils but no switching.

adjusting the inductance of the coils, the conventional two coil Z match could also have been made to work using the one output coupling winding. We learn something every day!

Coil assembly detail

Details of the modified coil assembly, which produced the results given, are as follows: The two primary coils, wound with 18SWG tinned

copper wire, are spaced 38mm apart on a common former as shown in figure 2. Winding diameter is 52mm and the turns of wire are spaced 3mm apart. The larger coil (L1) which has 8 turns is therefore 24mm wide and the smaller coil (L2) which has 4 turns is therefore 12mm wide. The coils are air wound with windings held in place by insulating strips. The 18 gauge wire seems a bit light for the application, but I have measured the

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coil unloaded Q factor and it runs well above the 100 mark.

The coupling coil (L3) is 4 turns of insulated hook-up wire closely wound around the cold end of L1. The degree of coupling affects the matching range and the coupling can be reduced, if necessary, by sliding L3 a little over the end of L1.

Summary

Here is another Z match tuner idea which gets rid of the two outputs and the output switching. It is not the same as the single coil Z match we have been writing about so much lately but it makes use of alternative coil arrangement to achieve much the same thing.

References

1. Joe Rogers VK3TO — Multi-band Tuning Unit — Amateur Radio October 1953.
2. Lloyd Butler VK5BR — Tests on the Compact Coil Z Match — Amateur Radio, December 1990
3. Random Radiators — (VK3AFW & VK3OM) The "AR" Single Coil Z Match — Amateur Radio, February 1993.
4. Lloyd Butler VK5BR — The "AR" Single Coil Z Match — Amateur Radio, April 1993.

* 18 Ottawa Avenue, Panorama SA 5047

BT

WIA News

New RSGB President

An announcement from the Radio Society of Great Britain (RSGB) tells us that Ian Stuart GM4AUP, a Scotsman, has been elected President of the society for 1994.

Ian is currently the RSGB Council representative for Scotland and chairman of their data communications committee. Obviously, a packet enthusiast, as is our President, Kevin Olds VK1OK.

**Remember to leave
a three second
break between
overs when using
a repeater.**

Simply, An All Band Vertical

George E Thatcher VK2EHN * finds that old antenna designs are still far from the scrap heap.

The late Clive Cook's article, published in October 1992 AR about the 1927 Antenna design leads me to report that just a few days ago, I installed a device apparently based on this 1927 concept and must report that the sceptics (including yours truly) are standing by with amazed (changed from amused) expressions.

Around five years ago I bought, from the Brisbane based maker, a device known as the Black CTW Antenna Coupler. The rush of blood subsided and I could find no use for this unit — until last week, when I had need of a compact (in terms of ground space) all band antenna which this coupler was claimed to produce.

Application notes supplied called for a vertically mounted tube, around 12 metres overall length. With some still lingering doubts and an eye on the budget, I purchased some aluminium tube, 6 metres long by 36mm O/D plus two shorter telescoping tubes. The resultant assembly measured 11.8 metres. Close enough, according to the info. Next, I threaded the supplied single insulated flexible cable through the tube and electrically attached the conductor to the top end. Incidentally, I found that a used champagne cork was ideal to use as a stopper at the top. The bottom end of this cable was brought out through a 10mm hole at the base.

This construction was gingerly raised (it is really quite flexible), attached at a height of 3 metres to a timber pergola and seated into an insulated base. The "Black" box, (CTW Antenna Coupler) consists of a white plastic tube about 200mm long and 75mm in diameter, with a support hook at the top and an SO239 socket at the base. Also protruding, are three cables. One is a red, single insulated flexible wire, about 300mm long. The second is a similar black wire, whilst the third is known as a counterpoise, 12 metres long and about 3mm in diameter. I suspect this is coaxial

cable but decided not to interfere with this well attached item.

Following the notes, the red wire was connected to the inner conductor of the antenna, the black was connected to the outer skin whilst the counterpoise was distributed through the garden bed. The Black Box was attached to the antenna base using nylon ties.

Everything looked shipshape, so, using a length of buried coax, (aesthetics/the XYL required a non-visible cable) the now complete vertical antenna was connected to my FT1000.

At very low power with the inbuilt tuner operating, everything checked out fine. However, here is the problem; even without the tuner in circuit, the antenna is virtually flat from 1.8 MHz to 30 MHz. Granted, a dummy load will also do this so the scepticism was really put the test.

Signals were coming in from everywhere. In some cases the S-meter was reading higher on the CTW vertical than on a properly directed 2 element beam (not always, but sometimes). Possibly something to do with phasing or approach angles?

The real test was transmitting, and this has also proven most gratifying. Local contacts in the lower bands have brought great reports and some really good DX. G, K, I, EA, JA, and many others have given me good reports. Quite amazing or surprising. I am not sure which.

There does appear to be some loss in the coupling unit as there is a small temperature rise on the case surface. Nevertheless, a worthy antenna.

It seems that Emil Geles idea in 1927 of a coaxial travelling wave antenna was practical and successful. Perhaps the Brisbane people developed or improved upon same by perfecting the coupling unit.

"Wiraburn"

26 Scribbly Gum Avenue Telong Park
TALLONG NSW 2579

A Small Antenna with BIG Results

Jim W Duggan VK4BOK * offers a solution to the problem of a truly portable antenna system.

As a ham in the USA, WA2LEW, I bought a small portable vertical whip antenna for around \$50.00. I was intending to use this antenna in a military-like barrack situation in Seattle, Washington for the next year or so. I was stationed in Seattle as an Ensign, working for the US National Oceanographic and Atmospheric administration (NOAA) Corps aboard the Hydrographic Survey ship DAVIDSON. When in port I had the time to enjoy ham radio and mounted the vertical on the window sill of my quarters. It was connected to a Heath HW101 Transceiver and a Heath SA 2040 Antenna Tuner. The vertical whip was a Barker and Williamson (B&W) Model 307-10 and included with it were 4 (base loading) coils for 40-10 metres, a counterpoise and a mounting bracket.

Using my SWR/Power Meter I tuned the antenna by first coiling the counterpoise around my hand to the approximate position as marked on the counterpoise wire. The counterpoise was then placed on the floor of my room and the antenna was then tuned to obtain an SWR of 1:1 on 20 metres using the antenna tuner. Power output was about 70 watts.

I started calling CQ on about 14.050 and had answer back from a VE7 in Vancouver. This was good, as my antenna was at least working. However, my next QSO was with a station from New Jersey with signals of 569 there. Throughout the year, this one kilogram antenna performed admirably, as it was only at about 2.5 metres above the ground.

My second impressive experience with this antenna was on a little adventure to an island off Newfoundland with a friend of mine, Ralph. Our reason for taking this camping trip in July 1984 was to photograph some of the marine birds on Baccalieu Island, about 4 km east of Bay de Verde. We had organized a boat with the local fisherman to take us to the island and to pick us up four days later. I had brought along my

Icom 2AT handheld and the vertical whip for possible use on the island. On our way up the peninsula to Bay de Verde, I had contacted "George" in Hearts Content on 2m and we had decided to maintain an evening sked while on the island.

This antenna . . . will be very effective, for those hams who have limited space . . .

The island was uninhabited except for a manned lighthouse on the southern point, which was not easily accessible from where we camped. During the three days we had maintained contact with "George" every evening. On the fourth day, we were ready to be picked up by the fishermen. However, they never came during the morning or afternoon and it was getting dark. I contacted "George" in Hearts Content, via the St.Johns repeater, about 70 km SSE of us. At the same time, in the dark,

the wind blew and the rain came down, with my friend Ralph holding up the antenna in his hands high enough so that we could hit the repeater.

I asked "George" to call one of the fishermen and ask when they would pick us up and then to get back to me. I found out that the fishermen had icebergs around their nets and had spent the day waiting for them to drift away, so that they could collect the nets. Finally, the next morning around 10 a.m., they arrived at the base of the cliff where they had dropped us off and we travelled back to the mainland — after they detoured to bring in the nets full of cod. Having the antenna this time really gave us comfort as we had no other way of contacting the mainland.

In 1986, I moved to Brisbane, Queensland and was anxious to find a job. In the meantime, I set up my equipment and proceeded to tune it up and to convert to 240 volts. The same antenna was mounted on the eaves in the back yard, about two metres off the ground with the counterpoise underneath it. I wasn't too optimistic, as the antenna was now facing the down side of a hill, with houses all round the area.

My first contact during the winter of 1986 was W6DQL in California on 20



Baccalieu Island expedition team at campsite.



Abandoned lighthouse at the northern tip of Baccalieu Island.

metres SSB! My signal was 57 while he was 54. This was very impressive for 60 watts at the time. I continued to have QSOs with stations from USSR to Japan, all through the USA and South Pacific. Most of these contacts were on 20 CW. One contact, on 17th April 1988, was with a station from my home QTH in Long Island, New York. This station, KC2FD was initially contacted on 20 CW, but we QSY'd to 20m SSB, with reports of 57 in Brisbane and mine 56 in New York. I sent a message to my parents and my wife could not believe how clear the signal was at the time. I have since moved to Townsville and am still using this little antenna and it continues to perform very well.

Tuning and Construction Details

The counterpoise is approximately 10.66m long fully extended. The insulated wire (18 gauge) is coiled around the hand so that the remaining wire length is as follows for the following bands:

40m : 1006cm
20m : 444cm
15m : 290cm
10m : 112cm

These lengths are approximate to obtain an SWR of 1:1. For operation indoors, the counterpoise should be laid on the floor at a right angle to the antenna. In rooms above ground, an improvement in operation may be noted by hanging the counterpoise as close to the wall as possible. I have used wooden clothes pegs to hold coil shapes and move the counterpoise coil around, or coil or uncoil the remainder to get better results. An SWR meter is clearly of assistance. An antenna tuner can also be used once the counterpoise coil is close to its band length. The alligator clip on the end of the counterpoise wire is connected to the aluminium antenna mounting bracket which is attached to a non-metallic object (ie window sill, eaves, etc), or it could be insulated with cardboard, rubber etc.

The antenna whip lengths are as follows:

40m : Full length (144.8cm) — Attach 40m coil.
20m : Full length (144.8cm) — Attach 20m coil.
15m : Full length (144.8cm) — Attach 15m coil.
10m : Full length (144.8cm) — Attach 10m coil.

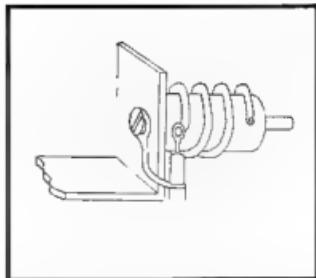


Figure 2 — Coaxial Connections.

6 m : Remove counterpoise and attach aluminium shorting strap. Whip is at 137.2cm. Do not ground window bracket.

The coils used are as follows:
40m : 22-24 gauge, 26mm long, 32mm diameter, 32 turns.
20m : 18 gauge, 30mm long, 32 mm diameter, 18 turns.
15m : 16 gauge, 32mm long, 32mm diameter, 11 turns.
10m : 14 gauge, 30mm long, 32mm diameter, 9 turns.

For mounting details of the coils and general construction details see Figures 1 and 2.

The cable used is RG58A/U. On the higher bands it appears that you do not have to readjust the counterpoise significantly when tuning up and down the band (ie CW band). Whereas you probably will have to if you change from the CW band and then operate in the phone band. The SWR may still remain below 2:1. On 40m, (which I have not operated on very frequently) you may have to retune within the CW and phone bands to keep the SWR below 2:1. This sort of antenna could easily be constructed from scratch and will be very effective for those hams or SWL's who have limited space to erect an antenna. As can be seen from the diagram it gives hope to some people that they can still enjoy ham radio without the space problems of large antenna systems.

Further information can be obtained by writing to the author if required.

Good Luck!

* PO Box 7951 Garbutt Qld 4814

ar

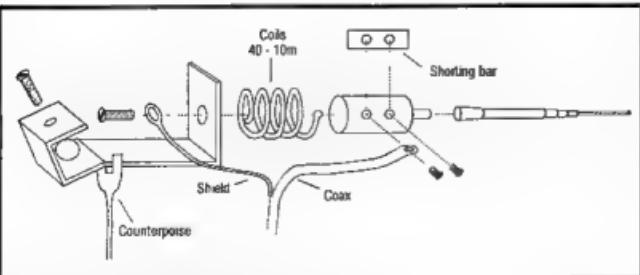
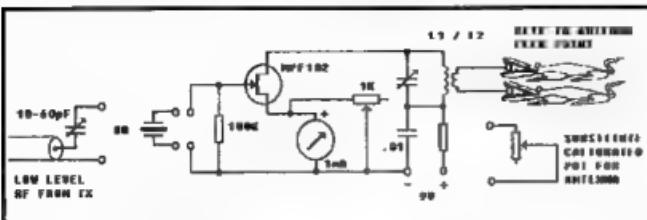


Figure 1 — Antenna Assembly.

Antenna Impedance Measurement by Substitution

Neville Chivers VK2YO 51 Meeks Crescent Faulconbridge NSW 2776.



After an antenna is erected and resonated to its desired frequency, it is necessary to know what the feed point Radiation Resistance is to correctly match the transmission line to the antenna, directly if they match, or by an Impedance Matching Transformer of suitable ratio if they do not.

This device when clipped across the antenna feed point will measure indirectly at the operating frequency the Radiation Resistance of the antenna where the transmission line is to be connected in-situ.

The oscillator is excited by a crystal or low level RF from a transmitter as shown, and brought to resonance by varying the C1/L1 tuned circuit in the drain of the MPF102 FET. L1/L2 is built as a plug-in unit, to cover the range of crystals or their harmonics that you wish to use, and the antenna to be measured.

The meter measures the source current of the FET and shows a pronounced dip when C1/L1 is adjusted to resonance. Once adjusted, clip the crocodile clips extended from L2 across the antenna feed point, and note the meter reading.

Remove the instrument from the antenna and substitute a non-inductive variable resistor between the crocodile clips. A 300 ohm pot will cover helical whips to folded dipoles.

Adjust the variable resistor until the meter shows the same value as it did when the device was connected across the antenna feed point.

The variable resistor will be the same value then, as the antenna feed point Radiation Resistance and if previously calibrated the antenna impedance can be directly read in

ohms from the substituted variable resistor scale.

By careful observation of the current variations in meter readings, any lumped constant can be checked for input impedance if it can be resonated at the input crystal frequency, or one of its harmonics. Provided it is physically possible to connect the device into circuit and within the operating frequency range of the FET.

The imaginative amateur can no doubt think of other uses for this instrument. I personally have tried it as a BFO using a ceramic filter as the exciting element and a miniature IF transformer in place of C1/L1, also as a crystal activity checker and marker oscillator to name a few.

Reference Reading — ARRL Antenna Handbook, 15th Edition, Chapter 2, page four, "Antenna Impedance".

WIA News

Powerline Interference Under Scrutiny

Powerline interference limits are being scrutinised in a revision of the Australian Standard prescribing the limits of electromagnetic interference (EMI) from overhead transmission lines, which provide protection for radiocommunications services.

The scope of the revision to AS 2344-1980 will change, the frequency coverage being

lowered from an upper limit of 1000 MHz, down to 30 MHz. A separate standard will now cover the 30-1000 MHz range.

Another change involves cross-referencing the methods of interference measurements.

Standards Australia's intention is to publish this revision as a joint Australian/New Zealand standard. Its release will complete the publication of all EMI standards in this area as joint standards, according to Standards Australia.

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1993 Remembrance Day Contest — Opening Address

This year's Remembrance Day Contest opening address was prepared by the Federal President, Kevin Olds VK1OK, and read by Bill Roper VK3BR. The Honour Roll was read by Warren Moulton VK3LX.

The Address

"Fellow radio amateurs. It is with great pleasure that I present, on behalf of the Wireless Institute of Australia Federal President, Kevin Olds VK1OK, this opening address to the 1993 Remembrance Day Contest.

I am very pleased to have this opportunity to speak to you on this opening of the 1993 Remembrance Day Contest.

We are surrounded by a world of change in our hobby, both at the government, Federal and Divisional levels as well as in the technical aspects of amateur radio.

We have recently seen the introduction of the Spectrum Management Agency, replacing the Department of Transport and Communications as the government body responsible for the regulation of our hobby. This provides us with challenges, as well as opportunities, as the new authority finds its feet and begins to put into place the mechanisms which will govern our hobby in the coming years. As the SMA is a new authority, we have the chance to get in at ground level, establishing contacts with this administration and forging ties which will be of long term benefit to amateur radio.

At the Federal and Divisional levels of the WIA things always seem to be in a state of flux. Federally we are undergoing a re-staffing in the Federal Office following the resignation of the General Manager and Secretary. This has necessitated a number of changes in the running of the Office and other Federal activities which we hope will prove invisible to the amateur population at large.

The technical side of our hobby has never stood still. From early beginnings with Morse code, we have progressed through AM and SSB to the likes of FM, RTTY, Amtor, Packet and ATV, to mention a few. The list of areas of activity of the modern radio amateur is ever increasing. New

At this time of remembrance we should also remember those who continue to give freely of their time and skills as amateurs for the good of the community.

frontiers continue to confront us — witness the emergence of moonbounce, satellite operation, packet operation and the use of computers. How long before spread spectrum, FMTV, enhanced digital modes and other emerging technologies become a routine part of the Amateur scene?

Despite this world of change a few things remain constant, such as the way in which amateurs unselfishly establish efficient and effective communications networks in times of local and international emergencies. At this time of remembrance we should also remember those who continue to give freely of their time and skills as amateurs for the good of the community.

Another constant in our amateur lives in Australia is the RD Contest which has established itself within the Australian Amateur scene as the one contest many of us compete in each year, whether we are normally contestants or not. It is the time when we remember those amateurs who have given their lives in service to their country as we engage in this "friendly contest". To those we remember today, the change which surrounds us would be unimaginable. In the same way, the things they did would have been unimaginable to those who founded our organisation

way back in 1910. We are all pioneers in our own way, continuing to progress ourselves, our community and country to the ultimate benefit of all. We should have pride in what we do and remember with pride those whose sacrifice enables us to enjoy our hobby today.

And now the Remembrance Day Honour Roll."

Honour Roll

"We pay tribute to these members of the Wireless Institute of Australia who paid the supreme sacrifice.

Royal Australian Navy

J. E. Mann	VK3IE
A. H. G. Rippin	VK6GR

Australian Military Forces

C. D. Roberts	VK2JV
J. D. Morris	VK3DQ
J. McCandlish	VK3HN
S. W. Jones	VK3SF
D. A. Laws	VK4DR
J. G. Phillips	VK5BW
K. S. Anderson	VK6KS

Royal Australian Air Force

F. W. S. Easton	VK2BQ
V. J. E. Jarvis	VK2WJ
W. Abbott	VK2YK
G. C. Curle	VK2AJB
T. Stephens	VK3GO
M. D. Orr	VK3OR
J. F. Colthrop	VK3PL
J. A. Burrage	VK3UW
J. E. Snadden	VK3VE
F. J. Starr	VK4FS
R. Allen	VK4PR
C. A. Ives	VK5AF
B. James	VK5BL
J. E. Goddard	VK6JG
P. P. Paterson	VK6PP

and

Merchant Marine

N. E. Gunter	VK3NG
R. P. Veall	VK3PV

They shall grow not old as we that are left grow old

Age shall not weary them nor the years condemn.

At the going down of the sun, and in the morning,
We will remember them."

Opening

"It is therefore with much pleasure that, on behalf of the Federal Council of the WIA, I declare the 1993 Remembrance Day Contest open.

Good luck in the Contest!"

Technical Correspondence

Lindsay Lawless VK3ANJ PO Box 112 Lakes Entrance 3909

G5RV Antenna

The G5RV is a popular recipe for a centre fed aerial but, how many are true to type?

The best available theoretical analysis of the G5RV is the paper by our own master engineer VK1DK published in the January 1989 issue of "AR". That paper shows that the G5RV is a mediocre, compromise broadband aerial. If a particular installation does not behave according to theory, I suggest it is worse than mediocre.

The design depends on a "matching section" behaving as a balanced feeder with properties predictable by transmission line theory. If the system, matching section plus aerial, is unbalanced, the behaviour is unpredictable and no amount of tinkering with "choke baluns", "candlebra baluns" or any other misnamed multi-inductor will restore balance.

Most backyard G5RV aerials will be

unbalanced for reasons given in the text books. An inverted "V" version will be unbalanced wherever it is located. If your pride and joy is getting results it might not be because it is behaving as a G5RV should.

If the system, matching section plus aerial, is unbalanced, the behaviour is unpredictable and no amount of tinkering with "choke baluns", "candlebra baluns" or any other misnamed multi-inductor will restore balance.

The current at any point on a balanced feeder conductor is equal in magnitude and opposite in phase to the current at the corresponding point on the other conductor. It follows that the voltages with respect to earth at corresponding points are also equal and opposite in phase. Similarly, the currents and voltages with regard to earth on corresponding points on the aerial conductors are also equal and opposite in phase.

Balance can and should be checked before pronouncing a G5RV recipe true to type. Current magnitudes can be measured with a current sensor similar to the toroids used in SWR meters. (An interesting but rather complex sensor is described by G5HMO in the June and July '92 issues of "Radio Communication".)

Check that current maxima or minima occur at corresponding points on the matching section conductors. It is not necessary to check phase. The measurements must be made with the whole installation in its final operating position.

Don VK1DK, in his January '89 article, suggests there might be a better length for the matching section (and aerial?). Apparently others have investigated that possibility and some results are published in "Radio Communication — Technical Topics" of January '93. Also in that "TT" is a report about experiments with "choke baluns" similar to the VK6BIL version report in December '92 "Random Radiators". From my knowledge of first principles, I can't support some of the claims made for those devices.

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SOME THINGS HAVE NO COMPARISON

amateur
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Technical Abstracts

Gill Sones VK3AUI

Dual Band Mobile Roundup

Only a large organisation like the ARRL can afford to buy six different mobile dual band transceivers to conduct a comparative review. Indeed, all reviews in QST, the ARRL journal, are of equipment purchased over the counter. The models in this review are similar to those available in Australia.

The review appeared in QST for June 1993 and was conducted by James W Healy NJ2L, who is the QST Senior Assistant Technical Editor. A panel of reviewers assessed the performance of the radios.

The technical measurements make interesting reading. The radios all met their specifications. Some measurements were, however, of parameters not specified.

A previous "Handheld Roundup" from the October 1992 issue of QST was summarised in the April 1993 edition of Amateur Radio magazine on page 15. The results make interesting comparisons. The handhelds were fairly close in performance to the mobiles.

The figures are shown in table 1.

The sensitivity of the receivers is given in dBm and the impedance is $50\ \Omega$. This is used in preference to the input voltage in microvolts and is quoted for 12 dB SINAD. This allows a more meaningful comparison once you have adjusted to the nomenclature.

The interesting thing is that the receiver sensitivities are in the same range as the handhelds, whilst the intermodulation performance is only a little better in most cases. Small wonder that so many operators experience disturbance from adjacent services.

The current drain is much higher than the handhelds and the current must be used to run the displays and the processor rather than provide superior receiver performance. A high level mixer and a clean high level of oscillator injection would improve receiver intermodulation performance considerably.

The HF transceiver has been considerably improved and the VHF/UHF transceiver is sorely in need of improvement. The techniques used are available at VHF and UHF and the improved strong signal performance is sorely needed.

The transmit to receive turnaround time is of interest for packet operation. However, the prime thing is to be receiving or transmitting intelligible packets which is different to full audio or RF. The figure given, however, does give an indication.

The transmitter power levels reflect the use of power output modules.

Valves Versus Solid State

An interesting comparison of valve and solid state designs and performance at VHF was published in June 1993 issue of the ARRL magazine, QST, by Ulrich L Rohde KA2WEU/DJ2LR/HB9AWE. The

performance of a number of valve and solid state designs was studied both by CAD techniques and by measurement. Both the actual measured results and the CAD results were in close agreement.

The valve equipment assessed was a 6CW4 nuvistor converter manufactured by Ameco and a 417A valve converter design widely used in the USA. These designs were typical of good quality 1960's era equipment used in the USA on 144 MHz and also on 220 MHz. The 6CW4 was available in Australia but the 417A was not so readily available in Australia. Local converters used TV dual triodes.

The solid state designs considered all used a high level double balanced mixer. The RF amplifiers considered used a bipolar cascode or a Dual Gate MOSFET and finally a GaAsFET to give a comparison of the various devices. The oscillator injection was +20 dBm which is quite high being 100 mW and the oscillator signal must be clean.

Given a good filter even the bipolar design would be superior to many of

Table 1

Radio	DR600T	IC2410H	IC3230IA	TM732A	C5608DA	FT5100
Sensitivity dBm for	144 MHz	-123	-124	-125	-125	-123
12 dB SINAD	432 MHz	-125	-123	-124	-124	-123
Two Tone 3rd	144 MHz	67	66	68	71	66
Order IMD						66
Dynamic Range	432 MHz	68	71	69	65	60
20 kHz Offset dB						75
Adjacent Channel	144 MHz	71	66	69	71	74
Rejection dB						62
20 kHz Offset	432 MHz	75	69	71	65	66
Tx Output Power	144 MHz					70
Watts	High	43	49	47	48	48
	Med	10	13	11	12	11
	Low	5.4	8	5	6	4
	432MHz					5.7
	High	32.3	39	35	35	42
	Med	9.5	13	11	11	11
	Low	5.4	8	6	7	-
Tx/Rx Turnaround	Mute On	110	175	195	111	200
Time	ms					110
	Mute Off	110	97	140	105	200
			-110	-210	-140	-225
Tx Current Amps		7.85	9.8	9.0	9.1	11
Rx Current Amps		0.8	1.1	1.1	0.83	1.1
						0.84
						0.84

Table 3

Converter	AMECO 6CW4	417A	Bipolar Cascode	MOSFET	GaAsFET
Noise Figure	4 dB	1.6 dB	0.8 dB	0.7 dB	0.4 dB
Third Order Input Intercept Point	0 dBm	+5 dBm	+7 dBm	+10 dBm	+10 dBm
Gain in all cases was around 20 dB					

the radios we use which suffer from disturbance by adjacent services.

The measured performance of all designs is summarised in Table 2.

Transmitter Finger Printing

A small advertisement in the June 1993 issue of QST advertises a plug-in card and software for an IBM PC or compatible which records the variation in frequency of a received

signal as the signal comes on air. A fairly simple procedure of recording the discriminator output of a receiver as a signal is received. During the first 100 mS or so of transmission the frequency transmitted varies as the transmitter starts up.

This technique of looking at the startup of a transmitter is not new but a computer based setup does have some possible uses. By building up

a library of various transmissions it would be possible to correlate and possibly identify particular transmitters.

If you listen to the beat note of an FM radio coming on the air you will hear the varying beat as the transmitter comes on frequency. This characteristic varies from transmitter to transmitter and may be used to identify transmissions.

The PC Plug In and software are marketed by a company called MoTron Electronics.

The concept does offer some interesting possibilities for repeater operators and others. Even if absolute identification was impossible the technique would allow the categorisation of signals and allow a more focussed response to problems.

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Book Review

HF Antennas For All Locations

By Les Moxon G6XN

Reviewed by Ron Fisher VK3OM

Over the years, I have read dozens of antenna books and read hundreds of antenna articles. But it's rare to meet an author on the air and actually hear how he puts his theory into practice. The exception is Les Moxon G6XN. Les can often be found on 20 metres testing out a new idea usually with spectacular success. Some years ago he moved from his spacious country property to more confined quarters but he still puts out a good signal, usually not too far behind the best.

The first edition of *HF Antennas For All Locations* was published back in 1982 and has been a good seller over that time. My own copy has been well thumbed through.

This second edition has been brought up to date and expanded to bring new antenna types and ideas to the attention of antenna experimenters. The book is divided into two parts. One, "How antennas work" and two, "Theory into practice". One completely new chapter describes "Small Antennas". Loop

and loaded antennas are described plus a discussion on the amount of loss that might be expected from such designs.

For G5RV enthusiasts there is a lot of data on the various feed methods but strangely, baluns don't rate a mention for use with this antenna.

I also find it strange that Les gives little information on antenna couplers. The "Z" Match in any form is also not mentioned.

None the less, if you are a wire antenna builder then this book is for you. If you believe that good antennas should be made from aluminium tubing then some of the designs included might make you change your mind.

In concluding, I must compliment Les Moxon on his continuing enthusiasm for amateur radio and antennas in particular. He is now well into his eighties. I hope I am still playing with antennas at his age.

Do yourself a favour, buy a copy of the new edition of *HF Antennas For All Locations*, I can guarantee the



antennas work I've heard most of them on air.

Our copy came direct from the publisher, the Radio Society of Great Britain, but copies are available from Divisional bookshops at the retail price of \$45.00.

A Low Noise Pre-Amp for the ICOM IC-275A/H

Albert (Bert) Gnaccarini VK3TU provides an absorbing modification to a popular transceiver.

The market for two metre multimode transceivers is highly competitive with all three commonly available Japanese manufacturers offering equipment of largely similar performance, give or take a few watts at the antenna terminal.

What seems to separate the equipment into the more and less desirable categories appears to be the features such as number of memories available, general coverage receive frequencies, power output, multi-band capability, whether the equipment will suit fast packet data transmission or not, price and the personal preference of the buyer.

Particular attention seems to be paid to the bells and whistles and not the fundamentals such as receiver sensitivity, front end design or strong signal performance.

When I chose to update my Yaesu FT-221R I opted for an Icom IC-275H, considering it to be the best value for money package at the time, a view I still maintain today.

With my main interest in two metres being weak signal SSB contacts, I was disappointed to find that the receiver sensitivity of the new rig was little or no better than that of my FT-221R. Admittedly, the old Yaesu had a modified front end using a low noise MOSFET, but my expectation was that the performance of the Icom, some 15 years its junior, would be somewhat better. After all, it used a GaAsFET front end and radios must have improved in the interim — or so I thought.

The fact was that as a multimode radio goes, the IC-275H was a pretty clever FM rig and that's all! Careful measurement of the Minimum Discernible Signal (MDS) confirmed my suspicions of the Icom with a figure of -137 dBm. As a rough indication, this translated to a Noise Figure of around 4 dB. So what had happened to the benefits of GaAsFETs?

A carefully built MOSFET pre-amp using the inexpensive BF-981 would easily return a noise figure of 0.7 dB and a GaAsFET should return around 0.4 dB, so my new rig was well and truly behind the eight-ball on those weak signals. Conversations with a couple of other amateurs using the IC-275A/H as well substantiated my opinion.

Options

I was faced with a number of options; build a mast head pre-amp using either a GaAsFET or MOSFET, buy a suitable masthead pre-amp or build a pre-amp into the rig. I chose the final option for a number of reasons. Firstly, as the rig is likely to be used in a portable situation, it's nice to be able to take the pre-amp with you, particularly to quiet environments where its benefits can be exploited. Secondly, as cable loss in my antenna installation at home is around 1 dB, a front end Noise Figure

of less than 1 dB would mean that in a suburban environment, the system would still be externally noise limited.

Building the pre-amp into the transceiver required no special care in waterproofing the unit and finally, it was the least expensive option as all that I required was already in my junkbox.

The Circuit

The device I used in the pre-amp was a BF-981 dual gate MOSFET. At a little over a dollar each, these transistors are excellent value for money. The circuit employed in figure 1 is an adaptation of one published in June 1984 AR by Gordon VK2ZAB and has been used extensively as masthead amplifiers with a great deal of success by my brother, Charlie VK3BRZ as well as others. He has built several of these and has reliably achieved measured noise figures of less than 1 dB. (typically around 0.7 dB). The circuit follows the traditional common source layout as is typical for this type of transistor.

There is little to say about the circuit except that care must be taken with construction paying particular attention to shielding, ground plane connections and minimising losses in the input circuit.

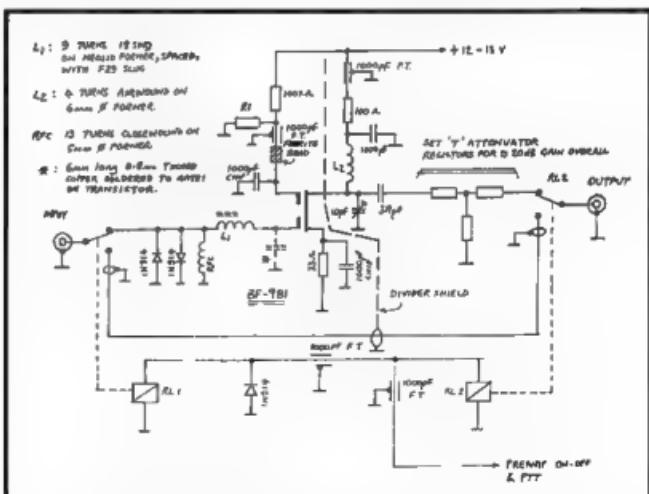


Figure 1 — Overall circuit of the pre-amp. Interfacing with the pre-amp ON-OFF and PTT is not shown, but is easy to arrange.

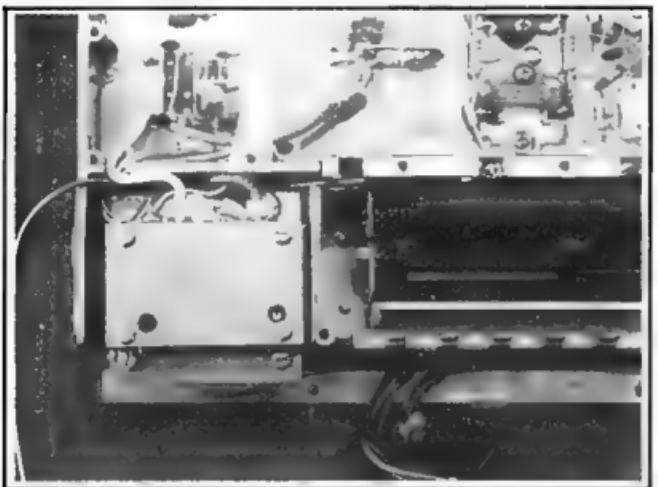


Figure 2a — Refer to the text.

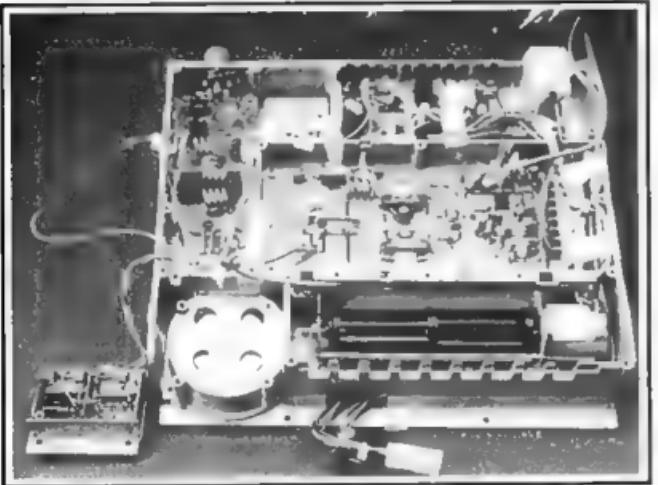


Figure 2b — Refer to the text.

Construction

The pre-amp is enclosed in a small box made of double sided PCB. This is easy to make and, as can be seen from figure 2(a) and figure 2(b), is easy to mount on the underside of the loudspeaker mount on the heatsink of the IC-275H. The signal switching relays for when the pre-amp is not required are also mounted in the case. Most of the switching for this

function is included in the IC-275H as the transceiver has provisions to use a masthead pre-amp employing DC feed up the antenna coax. Some interfacing to this circuitry is required, however I have left this out as it is not relevant to the topic of discussion and is quite simple to arrange.

Construction is of the "rats-nest" variety often referred to as "dead-bug" construction in American publications.

The input circuit compartment must be fully shielded from the output and includes an input switching relay. This can readily be achieved as shown in figure 3 by including a divider made of double sided PCB in the case. The BF-981 is mounted by its gate 2 and source leads directly to two "lands" etched onto the divider with its drain lead protruding through a 5 mm hole into the output compartment.

The ground plane of the divider must be strapped from input to output sides using brass or copper shim to ensure a low impedance ground in the vicinity of the transistor. Along with the BF-981 are mounted the source resistor and bypass capacitor as well as the gate 2 bypass capacitor. The pre-amp signal switching relays are connected using a small length of UT-141 coax which is soldered to the case and divider as these are assembled. Also, the input tuning capacitor value must be kept to a minimum, in most cases a 6mm length of 0.8mm tinned copper wire soldered directly to the gate 1 lead of the BF-981 will suffice as a variable capacitor.

It must be stressed that lead lengths and stray capacitances will significantly affect the performance of the pre-amp and care must be taken to reduce these factors. Keeping things small also assists in maintaining rigidity which contributes to overall stability. I fitted coax connectors to the input and output of the pre-amp only as a means of removing it from circuit during evaluation, however there is no reason why the connection can't be made using coax links.

The output compartment houses the output tuned circuit and drain supply circuitry which includes a 100 ohm resistor as part of the DC decoupling. This also facilitates setting the DC conditions for the BF-981. This compartment also houses an output switching relay and an output attenuator to set the insertion gain to around 15 to 20 dB. In practice, I found that the overall gain of BF-981 transistors varies significantly and the output attenuator needs to be set for each individual transistor. The ARRL handbook has

details of preferred value resistor 50 ohm "T" attenuators.

All DC connections into the case and across the divider are made via 1000 pF feedthrough capacitors.

Preampl Control

The preamplifier switching on the IC-275H provides nominal +12 volt line when the preamp is switched on. This line disappears to zero volts under three conditions; when the transmitter is enabled, when the radio is switched to DATA mode, and of course when the preamp is switched off. This being the case this line is adequate to control the relay state of the preamplifier.

The circuit of figure 1 shows the relays when the preamp is in the ON mode and it is in circuit. The relays used are reed types and are energised when the preamp is removed from circuit. To achieve this a simple DC logic state inversion is required for the control voltage for the relays. This was provided by a pair of silicon transistors which are not shown in the circuit diagram.

The preamp control voltage was used as the DC supply to the preamp and as the preamp relay control via an inverter stage driving the relays.

Modifications to the Transceiver

Installing the pre-amp is quite easy as the signal lead from the RF filter board to the receiver front end is routed right past the location I chose for the pre-amp. There is plenty of space to include DC supply and switching leads for the device as well. Also, I removed the RFC supplying the switched DC to the antenna connector, L1 on figure 4(a) of the IC-275H as it is no longer required.

A further modification I included at the time of installation was to relocate the antenna switching relay on the RF filter board to immediately adjacent the antenna socket so that the input to the pre-amp did not include the losses associated with the filter and SWR protection stripline as seen in figure 4(b) and figure 5. A measurement before and after this step showed around 1 dB improvement in receiver MDS, and every bit helps when a front end Noise Figure of less than 1 dB is anticipated.

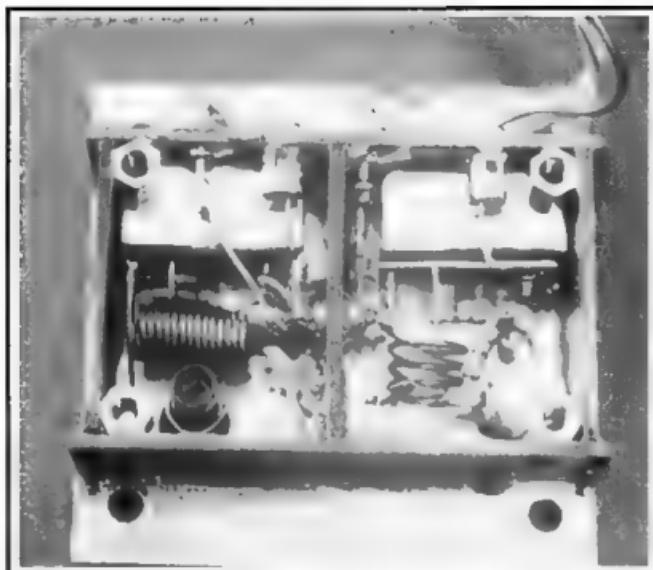


Figure 3 — Details of the pre-amp internals, showing the location of the major parts. Input compartment is on the left.

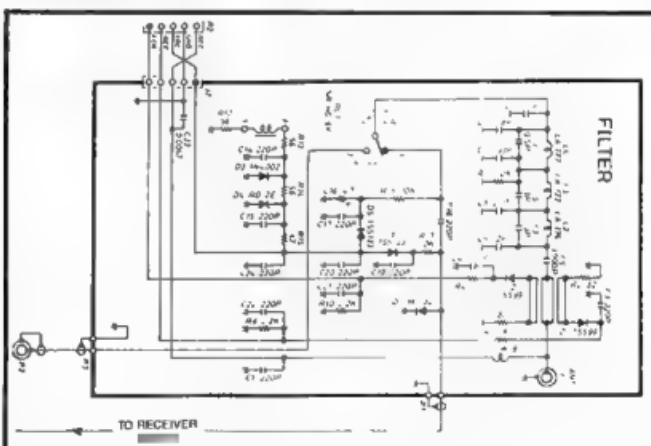


Figure 4a — The standard configuration for the IC275H output filter board, showing the convoluted and lossy receive signal path.

Setting Up and Tuning

The drain current for best noise figure for the BF-981 is in the order of 10 to 12 mA. This is set by adjusting the value of R1 while monitoring the voltage across R3. I found the most convenient approach was to set this

up before installing the pre-amp in the transceiver. The method I used was to use a potentiometer to substitute for R1 and set the current to 11 mA. Remove the potentiometer, measure its value and substitute the nearest fixed value resistor.

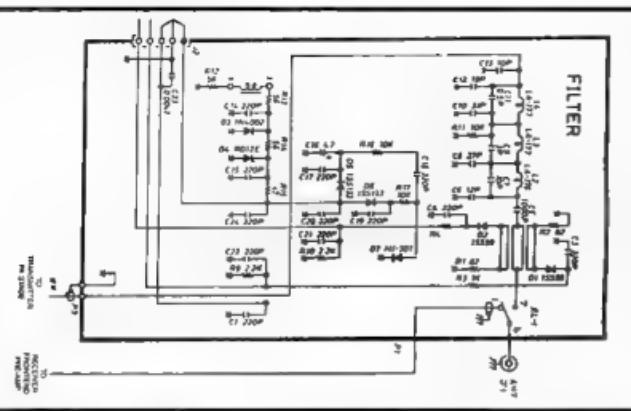


Figure 4b — The modified filter board showing how the relocated relay improves receiver signal path. The original relay used in the IC275H is identical to those used in the pre-amp.

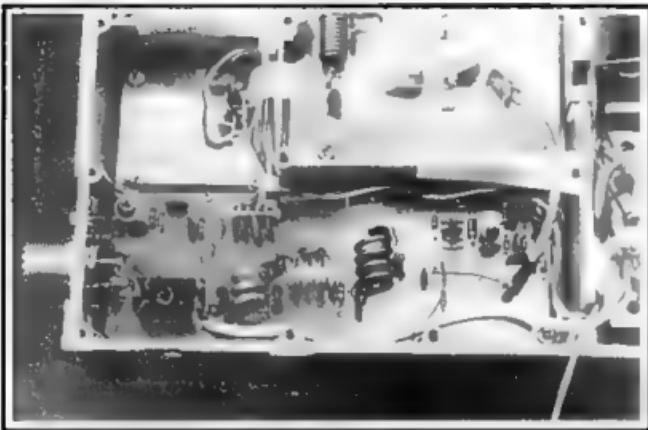


Figure 5 — Detail of modification to the IC275H RF filter board. Relocated relay is held to the PCB with super glue, and wired directly to the antenna socket.

Tuning the pre-amp requires a reliable weak signal source with an accurate 50 ohm source impedance. A weak signal is applied to the pre-amp and its input and output tuned circuits are simply peaked for maximum receiver audio on SSB or best receiver quieting on FM. This step should only be performed with the cover on the pre-amp case. I measured receiver audio on SSB with an accurate AC millivoltmeter calibrated in dB across the loudspeaker.

This also allows you to measure the

gain of the pre-amp so you can select suitable resistors for setting the overall gain of the pre-amp. Take care not to apply too much signal as the AGC action of the receiver will tend to compress audio output. I found that the AGC starts to operate at very low signal levels on the IC-275H.

Conclusion

The pre-amp as shown in the photographs tuned correctly-on the first attempt and showed no signs of instability. The insertion gain for the unit was set to a little under 20 dB.

It should be pointed out that any more gain than this is likely to compromise the strong signal performance of the radio as it will detract from receiver dynamic range.

The inclusion of the pre-amp has made a significant improvement to receiver sensitivity. The receiver MDS after the installation of the pre-amp was measured as -140 dBm and represents an improvement of around 3 dB. This represents an approximate noise figure of around 0.9 dB.

A further benefit is that the noise blanker now operates on very weak ignition noise and power leak when the pre-amp is switched in. Previously, the noise blanker would not take out noise below S2 or S3, making it ineffective as a QRN countermeasure on weak signal DX contacts.

The end result is that the IC-275H no longer appears deaf and the bonus improvement in noise blanker performance makes it a nicer rig to use. The measured improvement in receiver performance alone is worth the effort of constructing the pre-amp.

A Call to all Holders of a Novice Licence

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11am to 2pm Monday to Friday
7 to 9am Wednesday

Amateur Radio at the 1993 Rotary International Convention

Norm Dench VK3DNE, a member of the Rotary Club of Keilor, tells how amateur radio was a success at the Melbourne Rotary International convention.

From May 23rd to the 26th, Melbourne was host to one of the largest gatherings of members of Rotary International ever to have visited an International Convention. There were more than 20,000 delegates from over 187 countries and geographical regions in attendance.

The Flinders Park Tennis Centre complex was the main venue for the Convention. Plenary sessions were conducted in the main auditorium which has a seating capacity for 10,000 people. The opening ceremony had to be held in two sessions to cope with the huge attendance. The indoor practice court

area was transformed into a pleasant and comfortable "HOUSE OF FRIENDSHIP", an area where delegates could gather to meet with friends and acquaintances, and booths where the various International Fellowship Organisations of Rotary presented their activities. One of these International Fellowship Groups is ROAR, Rotarians Of Amateur Radio.

With the help of Dick Smith Electronics, who supplied an FT-990 HF transceiver, and Andy Coman Antennas who provided a multi-band vertical antenna, an Amateur Station was established on site in the House of Friendship with a special events call for the Convention, V13ROR.

Over the three days of the



The sign at the amateur radio booth.



Enjoying an eyeball QSO — left to right VK3DNE, G2DWQ, G4HMG.

WIA News

OSCAR's Orbits to Get Crowded

A world-wide mobile telephone service, which will work through a network of 66 satellites in low-earth orbit, has come closer to reality with the official launch last month of the company which is to manage the project.

Named Iridium Inc, after the satellite phone service's project name, United States communications company Motorola founded the company with equity from companies in Asia and Europe as well as the US.

The satellite mobile phone service is scheduled to begin operating in 1996. Call charges are predicted to be around three dollars US per minute (in today's values).

Equipment makers and corporations involved in Iridium are not concentrated solely in America, with German, Chinese and Russian companies taking part.

It's going to get awfully crowded up there in a few years. One hopes there'll be some room left for a few OSCAR satellites!.



"Pounding the Brass". John Swartz W3AGN works some rare DX.

Convention, although the House Of Friendship was only accessible from 9 am till 5 pm, which severely limited the useful propagation hours, more

than 150 contacts were made on SSB and CW with countries including Algeria, USA, Alaska, Russia, Germany, Slovakia, Poland, France,

Spain, Japan, Philippines, Antarctic, Papua-New Guinea, New Zealand and, of course, VK. A special QSL card was struck for the occasion and has been sent to all stations worked, via the Bureau.

The station was manned by members of ROAR from VE, W, G, JA, ZK, VK and I. There were 79 licensed Amateurs from around the globe who signed the visitors book at the booth and the 42 members and guests who attended the Annual General Meeting Dinner enjoyed an inspirational address by Hugh Archer WBJA, a Past World President of Rotary International.

V3ROR certainly provided a focus at the Convention where many long standing radio friendships were confirmed most enjoyably by an eyeball contact.

WIA News

New Federal Secretary and Office Manager

A new Federal Secretary and a Federal Office Manager were appointed in late July, and commenced work in the first week of August.

Bruce Thorne is the new Federal Secretary, with responsibility for the efficient management of the business of the Federal WIA Board and Council.

Donna Reilly is the new Office Manager, responsible for running the Federal Office of the WIA, which handles membership, examinations and publications.

They were selected from a field of 20 candidates who replied to advertisements placed in June, which closed on 16 July, just before the July quarterly Federal Convention.

The Federal Board's re-staffing sub-committee spent a day and a half interviewing candidates over the 17th and 18th July, finally recommending these two people who were subsequently approved

by the Board. Neither are radio amateurs.

We're sure all members will welcome them and give them every cooperation.

With the departure of Bruce Bathols, the position of Production Editor for Amateur Radio magazine was advertised in "The Australian" at the end of July. Until an appointment is made to this position, Bill Roper VK3BR, immediate past Federal General Manager and Secretary will be producing the September and October issues of Amateur Radio.

Amateur Station Statistics

Spectrum Management Authority (SMA) statistics on active station licenses to the 30th of June show that there were 18,242 amateur licenses issued to that date, an increase of only 20 in the three months from the 31st of March.

This indicates that amateur

radio growth, which tapered off in the past year, remains sluggish, likely affected by an increasing rate of silent keys together with losses of those who give up an interest in the hobby and let their licence lapse.

However, the SMA statistics do indicate there were 16 licences pending at 30th June.

Overall, there were 10,685 Full licences on issue, an increase of 51 on March figures, while there were 3390 Limiteds, a decrease of 21. There were two fewer Novices as of June, compared to March, with 2631 licences issued, and Combined licences were down by seven, to 1531. It seems a few people upgraded!

Repeater licences were up by four, to 338 at the end of June, while beacon licences were down one, to 26.

Have you advised
SMA of your new
address

Luke Gow Follows Family Tradition

An extract of an article by Don Rannard VK2LDR which appeared in the Manning-Great Lakes "EXTRA"



Under the tutelage of his father, Rod Gow VK2NO, Luke Gow studied for his ham licence and is now VK2GXQ. This is his story as published in their local newspaper:-

Fourteen year old Luke Gow, who is a year nine student at St Clare's High School in Taree, lives with his parents Rod and Wendy on their property on Oxley Island.

Luke's family has a tradition in amateur radio. His grandfather being first licensed in 1938, while father Rod holds a full call licence.

A school assignment from St Clare's last year stimulated Luke to seek the help of his father Rod for more information.

"I remembered that dad had a transmitter stored away in the roof, so I asked him to get it down," Luke said.

"Dad and I set it up and he showed me how to talk to people all over Australia and the world by using the transmitter. I then decided to go for my own licence and after studying in my spare time during the Christmas holidays, I passed the exam in March and was granted the licence."

Since going "on air" Luke has spoken to people in ninety different countries around the world. These countries include Antarctica, the Galapagos Islands, Kenya, Macau and Europe.

On one occasion Luke spoke to an entire family in Kuwait who were also interested in amateur radio.

He has a large collection of cards

Goldilox A Grim(m) Fair-y Tale

Rodney Champness VK3UG * tells how some pirates learnt their lesson.

Once upon a time, about the Ides of March to be exact, two young gentlemen gathered at the abode of one of them, to place upon the air certain messages and signals which, under the laws of the land, they were not supposed to do.

They had been sending their signals for only a little while when there came a "knock, knock" at the front door. They wondered who it could be — no-one could possibly know they were not gentlemen at all, but pirates! Ah well, probably only a passing stranger wanting to ask his way.

So one of the pirates opened the door, and there indeed was a stranger, who introduced himself as Goldilox. Now the pirates had never met Goldilox, although they had heard about him and knew he lived at Ray-Deo Cottage, at least between 8 o'clock in the morning and 4 o'clock

and other small items sent from around the world by people to whom he has spoken on radio. Luke has also spoken via his radio to people in the United Nations Headquarters in America and to ordinary people in 44 of the 50 States of the US.

"I have spoken to a chap called Bob at the Johnson Space Centre in America and he has sent me a lot of interesting material on the US Space Satellite program," Luke added.

"Because I am talking first hand to the real people of this world, I have much better understanding and knowledge of their lives and lifestyles. Too often we only hear politicians or what the media wants to present," he said.

Luke feels that his involvement in amateur radio will help his career prospects as he wishes to study Science and become a teacher.

"Quite often I have my mates in to participate in radio activities and I would like to see more young people becoming "ham" radio operators", Luke said.

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in the afternoon from Monday to Friday. What was he doing so far from home and at such a late hour?

The pirates soon found out. He wanted their message-sending machines. They also found out that Goldilox had a third arm. He usually kept it hidden, but showed it to them soon after they had let him in.

The pirates were very frightened indeed when they saw how Goldilox was armed — they knew quite a lot about the people at Ray-Deo Cottage, or at least they thought they did, and had made jokes about them. It was a different story now!

So they gave their message machines to Goldilox, and watched sadly as he placed them in his carriage, drawn by 30 horses and drove off into the night.

Bright and early the next morning the pirates made their way to Ray-Deo Cottage, hoping that if they told

Goldilox they were sorry they had disobeyed the laws of the land, he might forgive them. Perhaps even let them have back their message machines if they promised to give up being pirates.

They asked if they could see Goldilox, and soon a very tall and handsome man came to them and said, "What can I do for you?" The pirates replied, "We would like to see Goldilox." "But," said the tall man, "I am Goldilox."

"You are not the Goldilox who called to see us last night and took away our message machines," said one of the pirates. Then the tall man said, "I think you had better come inside and tell me all about it."

And so the pirates told him all that had happened the night before, and said they would know the fake Goldilox if they saw him again. They might even know his voice if they happened to hear it.

The real Goldilox wrote all this down in a book he called his diary, and told the pirates to come back and see him again in a few days time.

Goldilox then went to see his friends at a place called the Monitoring Station where they have a very special message machine which keeps watch on all signals and records them in a very long and narrow book called "tape". For several days he was busy listening to voices, hoping to hear the one he thought would belong to the man who had tricked the pirates.

At long last, after many hours of hard work, he found it — the voice of the wicked Baron Horrid-Al, who was a really BIG pirate and had been for a long, long time. But the people at Ray-Deo Cottage knew all about him, although the baron did not know this and pretended to be a kind and honest man, especially to younger pirates.

So when the two young pirates went back to Ray-Deo Cottage they were able to listen to Baron Horrid-Al's voice and say, "Yes, that is the man who took our message machines."

Goldilox — the real Goldilox — then went to see some other friends, the Blue Bottle Men, whose job is to see that the laws of the land are obeyed, and although the young

pirates themselves had been disobedient, what the wicket Baron Horrid-Al had done was far, far worse.

So Goldilox and the Blue Bottle Men went to the house where Baron Horrid-Al lived and took him away and locked him up. Later on he was sent to a place called Bluestone Castle, which is not really a castle, but a sort of college where people like Baron Horrid-Al are given lessons for a year or two years or perhaps even longer.

The two young pirates are also

receiving lessons, and later on hope to buy new message machines and use them as gentlemen, as set out in the laws of the land.

As for Goldilox and his friends at Ray-Deo Cottage. Well, of course, they all lived happily ever after.

Editors' note: Once upon a time, there was a Victorian Radio Inspector whose name was David Gold.

* 17 Helms Court, Benalla Vic 3672

WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of July 1993.

L20946	MR R D KIDD	VK2GVA	MR J MORRIS
L20947	MR G H SCHULER	VK2GYH	MR B BRAITHWAITE
L20948	MR R E SHAMMAY	VK2JSB	MR S BATHIS
L20949	MR M F GROGAN	VK2KFS	MR K G FORBES-SMITH
L20950	MR F HUNT	VK2NMB	MR M B BRASSINGTON
L20951	MR S KUMAGAI	VK2TCI	MR P COX
L20952	MR V PINCZEWSKI	VK2VCV	MR A A CAMPBELL
L20953	MR D M REED	VK3AXL	MR B J NEUMANN
L20955	MR J NOLAN	VK3BFT	MR B TONIZZO
L30784	MR A LUCANI	VK3CCA	MR T CHOY
L30856	MR W TANGEY	VK3CD	MR A CAMPBELL-DRURY
L30859	MR O THOMSON	VK3EE	MR E CALLEJA
L30860	MR L LATIMER	VK3ETP	MR S DAITKEN
L30861	MR K GILBERT	VK3EX	MR H PAKULA
L30862	MR J MILLER	VK3FMH	MR M H HOKE
L40352	MR A K GUNN	VK3KR	MR P O'BRIEN
L50303	MR F KISH	VK3TQT	MR J SOSNIN
L60327	MR G LEA	VK3VTR	MR K J TRIINDER
L60329	MR J I GARNETT	VK4AKD	MR H H BROWN
VK1JS	MR J STEVENS	VK4AQJ	MR J C PENNY
VK1MTX	MR A IHASZ	VK4CCG	CHANEL COLLEGE
VK2ACW	MR J ROGERS	VK4DAS	MR D SMITH
VK2BTS	MR A J SMITH	VK4MIM	MR T M DICKSON
VK2DRP	MR D R PLUMB	VK4TEK	MR J W HILL
VK2EJC	MR J R CAMERON	VK5RTV	SA ATV GROUP
VK2FHC	MR E LAHDONY	VK5UW	MR J F BOTHWELL
VK2GOD	MR A W CLARKE	VK6AYK	MR J M COHOE
		VK6DMR	MR M P DUNN
		VK7MJB	MR J M BEATTIE
		VK7NKR	MR K J RILEY
		VK7OC	MR H OCHSNER
		VK7PBC	MR B R CRUSE
		VK7TTT	MR M RICHARDSON

Don't buy stolen equipment — check the serial number against the WIA stolen equipment register first.

Make Your Own Low-Loss Capacitors

Graham Thornton VK3IY * revives a practical method of construction.

Capacitors capable of handling high voltages and currents at RF are very hard to come by. In the early days of amateur radio (no, even further back than my time!) home-brewing of capacitors was commonplace. The time is nigh for a revival of this practice.

Advantage can be taken of the quite extraordinary dielectric properties possessed by polyethylene (polythene). Its breakdown voltage is 1000 volts per mil (ie per one thousandths of an inch). This amounts to a million volts per inch! Its dielectric loss at RF is very small. A capacitor with polythene dielectric will have a power factor of 0.0003; that is to say a Q of 3300. Put another way, of the product of the RMS values of voltage and current across and through the capacitor, only 0.0003 of it will be dissipated as heat. As a practical example, with 10kV and 1A (10kVA), only 3W of heat will be produced.

Fortunately, supplies of this excellent dielectric are readily available. Pure polyethylene sheeting can be obtained which is just one thousandth of an inch thick. It is called "GLAD Wrap" (1).

The capacitance of a parallel plate capacitor is,

$C = 500A/n \text{ pF}$ where A = area of one plate in square inches and n = the number of layers of GLAD Wrap. Or, for you young "foegays" who prefer everything metric:

$C = 77A/n \text{ pF}$ where A = area of one plate in square centimetres.

The breakdown potential will be 1000n volts.

One catch about polythene is its low melting point. It softens at 104C. It is necessary to solder the connecting leads to the plates before assembly.

The GLAD Wrap should project beyond the dimensions of the plates, and be folded back over their edges. This will prevent the fringing field breaking down the air between the edges. Wrinkles and air bubbles should be avoided in the dielectric. The whole can be wrapped in GLAD Wrap (what better insulator?). The assembly should be clamped firmly to exclude air. For the desperate, this could be done with a plastic clothes peg, or bind it tightly with fishing line, or whatever. If a screwed clamping arrangement is used, this will produce a variable capacitor whose maximum capacitance will be as calculated above.

One intriguing possibility is to use copper coins as electrodes. (Well, after all, they won't buy much else, will they?) The inevitable air gaps caused by the

embossings will give a lower capacitance than calculated.

Thin dielectrics are unlikely to cause a problem, but with thick ones, considering the low thermal conductivity of polythene, temperature rise, rather than dielectric breakdown, may impose a limit on the applied voltage. If this seems to be a problem, try halving the thickness and

doubling the area. This will give the same capacitance and loss, but with lower temperature rise. Be sure to allow a factor of safety when calculating dielectric thickness and, remember, it is peak, not rms voltages, which matter.

My current information is very vague about temperature coefficient of capacitance, so I'm not really in a position to comment. The resistivity of polythene is 10^{17} ohm-cm .

Ref 1 — GLAD Wrap is the registered trademark of GLAD Products of Australia
* 1/7 Alliston Street, Elwood Vic 3184

Spotlight On SWLing

Robin L. Harwood VK7RH*

September has come around once again and propagation is rapidly changing over from Winter to Summer. Signals are no longer coming in on the lower frequencies as they were in June and July. I was able to hear both Deutsche Welle and Swiss Radio International on the 49 metre band at around 0200 UTC. This corresponds to Midday locally. These European signals come down the South Atlantic and across Antarctica judging by the auroral flutter present and usually observed three weeks either side of the shortest day (June 21st).

Don't forget that this month most major international broadcasters also alter their frequencies to take account of these propagational changes. These are introduced on the last Sunday in the month to coincide with continental Europe reverting to Central Standard Time. This Sunday has largely replaced the traditional first Sunday in September, when frequency alterations can still occur.

While tuning around the 9 MHz region in late July, I came across an Arabic speaking broadcaster on 9165 kHz. It was at around 0500 UTC that the signal peaked. I cannot find references to any clandestine operations in the Mid-east on this channel, although a Sudanese clandestine has been known to frequent it, in African dialects. This signal, though, is clearly targeted to the Middle East, possibly Iraq. I am aware that an anti-Iranian clandestine has been hovering around this spot but the programming is definitely in Arabic and not Farsi, which is the language of Iran.

And while we are on mysterious signals, there have been some unusual SSB operations down on the band edge of 7 MHz. Tune between 1200 and 1400 UTC between 7000 and 7010 and you may hear stations in Indonesian singing, whistling

and generally carrying on. I doubt that these are amateur stations as there are YB nets further up the band. The stations don't appear to readily identify themselves, although there are similar SSB operations on adjacent frequencies to the 40 metre band, eg 7415, 7430, 6985 kHz. I'm sure that your divisional IARU MS co-ordinator would be interested in your observations. Details on your co-ordinator are found elsewhere in this issue.

The BBC World Service recently had 40,000 pounds sterling cut from its English programming budget by the Foreign Office. Although this shouldn't affect the overall output, it has caused cutbacks in live sports commentaries such as the recent Test Cricket series between Australia and England. Fortunately, Radio Australia was able to fill in the gap, although one region did miss out, the West Indies.

Well, that is all for this month. Don't forget, you can reach me via packet as follows: VK7RH @ VK7BBS. Until next time, good monitoring and 73
*52 Connaught Crescent, West Launceston TAS 7250

**Sign up a new
WIA member
today. We need
the numbers to
protect our
frequencies and
privileges**

AMSAT Australia

Bill Magnusson VK3JT*

DOVE Recovery

AMSAT news service reported last month that a serious attempt is being made to recover the DOVE satellite, DO-17. This satellite has been plagued with problems since launch and has never really worked properly. Three amateurs, WDOE, NK6K and KORZ will be involved in the recovery program. They have had encouraging results already with uplink commands achieving correct responses from DO-17. The next step is to upload "house-keeping" software. This is being done by Harold Price NK6K. It will be a rather delicate procedure and, if successful, should result in DO-17 being restored to full operation. Keep listening on 145.825 MHz for the beacon and telemetry frames. They can be copied on a standard (1200 baud) terrestrial packet radio set-up and, as the recovery proceeds will no doubt contain bulletins and messages reporting on progress.

EME tests of interest to satellite users

In October and November the ARRL will be holding the annual EME contest weekends. An extra event of interest to all satellite operators will take advantage of the expected increase in activity over the two weekends involved.

The Toronto VHF Society, using the callsign VE3ONT, will use the 46 metre (150 ft) diameter radio telescope at Algonquin Provincial Park, grid reference FN05XW, to make EME contacts. With such an enormous amount of gain at VE3ONT it will allow reasonably well set up satellite users to try out their stations on EME operations. VE3ONT will be active the full weekend of each contest period, October 9-10 and November 6-7, but of course they will only be able to operate EME when the Moon is in their sky! Below is the schedule of their operations.

VE3ONT will operate "split" and they ask that stations avoid calling on their transmit frequency. VE3ONT will transmit and receive with left-hand circular-polarisation (LHCP) off the dish on all bands. This means that, after reflection

National co-ordinator

Graham Ratcliff VK5AGR
Packet VK5AGR@VK5WI

AMSAT Australia net

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions)

Primary 7064 MHz. (Usually during summer)

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.

AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia, addressed as follows:

AMSAU Australia
GPO Box 2141
Adelaide SA 5001

from the Moon, signals will be right-hand circular polarised (RHCP). This will permit them to work stations with vertical, horizontal, or RHCP polarisation, which covers the majority of satellite users. VE3ONT will transmit at the legal power limit on 144 and 432 MHz and 100 watts on 1296. Power amplifiers and receiving pre-amplifiers are located at the dish feed. Their intention is to provide an initial EME contact for as many stations as possible. Operation will be primarily on CW, although SSB might be employed depending on signal strength and number of stations calling. They anticipate being able to work OSCAR-class stations with 100 watts of output power on 144 and 432 MHz; 25 watts should be sufficient on 1296 MHz.

If you study the times mentioned below you will see that, although the Moon window is quite reasonable in Canada, it does not rise until the wee small hours in

eastern Australia. An occasion such as this, however, will no doubt tempt many VK satellite operators to wait up until 2 or 4 am on those nights to (at least) test their receiving gear. This is too good an opportunity to miss. A similar test last year was a wash-out as they experienced very bad weather at Algonquin and the owners of the big dish were not willing to unlock it from its park position for an amateur operation. Peter VK3CPO and I sat up until 3 am on that occasion, listening in vain. Better luck this time!

A blast from the past

I regularly receive publications from ESA, the European Space Agency. In the April issue of "Earth Observation Quarterly" I noticed an article that struck a chord. It was titled "Polar Navigation" a 23 day adventure through the Arctic with a helping hand from ERS-1". The article gave an exciting account of a journey across the Arctic ocean by a small ship, the Frontier Spirit. Not being an ice breaker, the Frontier Spirit had to negotiate a passage through the ice and was able to do this despite some anxious moments with the aid of information supplied by the ERS-1 satellite. I recalled that back in 1988 I was teaching an electronics class and several students had chosen communications as an elective unit. We had set up a listening station to monitor the downlink beacon of UoSat-2 (AO-11). The beacon was being used to transmit accurate lat/lon position data to a party of skiers who were taking part in a unique exercise, the trans-polar ski-trek. The party comprised 9 Russian and 4 Canadian skiers who were to take 100 days to travel from Cape Arctic in the Severnaya Zemlya islands to the north of Russia across the north pole to tiny Ward Hunt Island near Cape Columbia on Ellesmere Island north of Canada. We listened in day by day and plotted the position of the party on a map of the area. We joined in their celebrations when they reached latitude 90 degrees, the north pole and we celebrated again when they reached Ward Hunt Island. That map is still in my radio shack. I was struck by the similarities between these two events, separated by five years and a lot of technology. I'm sure the control station crew in this latest event could not have been more excited about the outcome than those kids in 1988.

New satellite launches

The SPOT-3 mission (Ariane V-59 from Kourou) will carry several new Oscars. The flight is presently scheduled for launch mid-September. Orbit is 800 km and inclination 98.7 degrees.

Date	VE3ONT TX Freq	Listening range	Approx times (UTC)
Oct 9	432 050	432 050 — 432 060	0445-1830
Oct 10	144 029	144 025 — 144 030	0550-1900
Nov 6	432 050	432 050 — 432 060	0340-1700
Nov 7	1296 050	1296 050 — 1296 060	0450-1730

Apart from SPOT-3, there are SIX other payloads:-

Stella: German geodetic satellite (like LAGEOS)
HealthSat: Commercial satellite based on UoSAT bus.
PoSat: Commercial/amateur satellite based on UoSAT bus.
Itamsat: Amateur satellite based on Microsat bus.
KitSat-B: Amateur satellite based on UoSAT bus.
Eyesat-A: Commercial Microsat (has amateur component called AMRAD).

KITSAT-B: Mailbox (Pacsat protocol) experiment plus CCD earth imaging system and a DSP experiment.
Uplink: 145.87/145.98 MHz
Downlink: 435.175/436.50 MHz 2/2.2/5 W output power
Speed: 9600 bps

ITAMSAT: Mailbox (Pacsat protocol).
Uplink: 145.875/900/925/950 MHz
Downlink: 435.870/820 MHz
Speed: 1200/4800 bps (experimental 9600)

AMRAD: not planned for "routine" services. Has modem capability for 1200 and 9600 bps but is said NOT to be Pacsat compatible. Commercial payload has priority.
Uplink: 145.850 MHz
Downlink: 436.800 MHz
Speed: 300 — 9600 bps

POSAT: Imaging (two cameras, 1 km and 200 m resolution); DSP and cosmic ray experiments; autonomous navigation with GPS and a star sensor; plus a (Pacsat protocol) mailbox.
Uplink: 145.925/975 MHz
Downlink: 435.250/275 MHz (250 primary)
Speed: 9600 bps (38.4 kbps probably)

I don't know much about the last two satellites but it should be worth keeping up with the news bulletins as the launch date approaches. I'll see if I can include some more details in the column next month.

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Tasmanian Devil Net Award, where contacts on other bands qualify for the Award. There are probably quite a few that fall into this category but, again, information is frugal.

With this in mind, I would like to see created a list of
(a) WIA Divisional Awards,
(b) Club sponsored Awards within each State and, where possible
(c) Ample warning of any special event Awards.

The whole concern under the control of appointed State Award Managers, who could, at their discretion, forward advice for publication on the above.

By now, all members of the DXCC Honour Roll will have received stickers to attach to their certificates. The idea for these stickers was not my brainchild, but that of Gray Taylor VK4OH.

For those members of the Honour Roll that I have not yet contacted personally, could you now please send profile information plus photographs for publication in the AR magazine.

Now here are some more DX Awards, which may interest you. They fall into the not-so-easy, not-so-hard category.

Alaskan DX Certificate

This award requires contacts with 10 Alaskan amateurs as follows. One each from Southeastern (that part of KL7 east

AWARDS

John Kelleher VK3DP*

Awards Information

The current DXCC standings were published in the August edition of AR magazine. Some listings may appear to be incorrect, but this is caused by receipt of alterations and upgrades too late to be entered into the DXCC database. Please remember that I am publishing the listings each February and August.

When I receive your additions and upgrades, they are thoroughly checked, then entered on to master sheets, accompanied by a running sheet, which lists all "transactions" as they occur. When this process is concluded, all changes are entered on the database.

Please, when forwarding your claims for upgrades to your listings, just include those DX countries that are verified additions to your earlier achievements. Then, at a glance I can see how many countries you have worked and confirmed.

I have been your Federal Awards

Manager now for two years, and apart from the late and great Joe Ackerman, and Bob Jackson VK7NBF, I have yet to see in print the names or identities for the individual State Awards Managers. If, and I say this reservedly, we had a strong cadre of State representatives, then quick and reliable references could be made to any or all available awards. I receive many requests from overseas amateurs for information, and, though I hate to admit it I am left floundering for answers. My immediate loyalty is to the Federal Awards scene, but I would like to see all the Australian Awards grouped together. Previous requests for this type of information have been very sparsely answered, I would say frugal. I think that the time is opportune, while we have a lull in Solar cycle activity, to get organised, and await the climb to cycle 23. Admittedly, most of our "internal" nets are located on 80 metres, but some are accessible on other bands eg The

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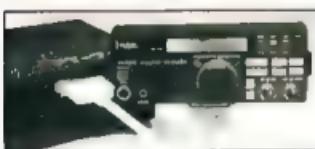
2 Year Warranty FT-747GX Compact H.F. Transceiver

The FT-747GX is a compact SSB/CW/AM and optional FM transceiver providing 100 watts PEP output on all 1.8-30MHz amateur bands, and general-coverage reception from 100kHz to 30MHz. Convenient features include a front panel mounted speaker and an easy-to-read backlit digital display, dual tuning steps for each mode, dual VFO's for split-frequency operation, and 20 memory channels. Wideband 8kHz AM and narrow 500Hz IF filters are also a standard feature. Complete with Yaesu MH-1 hand microphone.

Cat D-2930



\$1299



RMK-747 Remote Mounting Kit

This modification kit allows the front panel of the FT-747GX to be mounted away from the body of the transceiver. Price includes installation on your FT-747GX.

Cat D-2931

\$349

SAVE \$100



FT-990 DC Version

(Requires 13.8V)

Cat D-3255

SAVE \$200

Only \$2995

2 Year Warranty FT-990 H.F. All-Mode Base Transceiver

The FT-990 offers many of the advanced features of the legendary FT-1000, yet in a more compact and economical base-station package. Its excellent front-panel layout together with clear labelling a large back-lit meter and an uncluttered digital display provides very straightforward operation. The receiver performance is excellent, with a wide dynamic range front-end circuit and two DDS's providing a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmission allowed. An internal auto antenna tuner with 39 memories is a standard feature while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch, IF bandwidth selection, an effective adjustable notch filter, 90 memories and one-touch band selection. Microphone optional extra.



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2 Year Warranty FT-650 6m, 10m, 12m 100W Transceiver

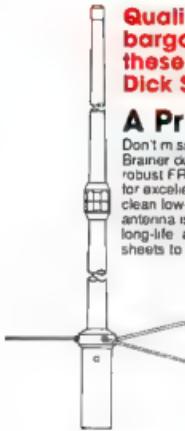
Now's the time to get ready for the summer DX season on the 8m and 10m bands, and the Yaesu FT-650 mobile transceiver allows you to do it in style. Its all-mode operation, 100W RF output (SSB, FM, CW), and continuous 24.5 to 56MHz receiver coverage allows you to hear signals outside the Amateur bands, so you can track the rising M U F and work stations as soon as the band opens. The use of 3 D.D.'s and a 2-stage low noise RF pre-amp results in a very quiet and sensitive receiver (SSB/CW, 0.125uV). To cater for the FM enthusiast, the FT-650 provides repeater offsets, as well as exceptions. 0.16uV (12dB SINAD) sensitivity. Other features include selectable tuning steps, manual/auto IF notch filter, RF speech processor, IF shift control, 105 scannable memories and an effective noise blanker. Includes MH-1 hand microphone.

Cat D-3250



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Compact GST-1

2m/70cm Antenna

Frequency 144-148MHz 430-450MHz
Gain 6dB on 2m, 8dBi on 70cm
Length 2.5m
Type 2 x 5/8 wave (2m)
4 x 5/8 wave (70cm)

\$179 **SAVE \$20**

Long Range GST-3

2m/70cm Antenna

Frequency 144-148MHz, 430-440MHz
Gain 7.9dBi on 2m, 11.7dBi on 70cm
Length 4.4m
Type 3 x 5/8 wave (2m)
7 x 5/8 wave (70cm)

Cat D-4835 **\$269** **SAVE \$10**

BRAENER

SO-239 Base/Lead Set

A convenient way to mount a PL 259 type antenna. This quality Japanese SO-239 base is pre-wired with 4m of low loss coax cable and has a PL-259 already fitted for connection to your transceiver.
Cat D-4052

\$24.95



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Yvesu stocks and some antennas not held at all stores, please contact your local store for stock availability, or order by phone 008 22 6610

2m/70cm Magnetic Mobile

The black TM 723M is a slimline, compact dualband mobile antenna that's supplied with a low-profile magnetic mount and low-loss coax cable making it ideal for city drivers who can't use a long antenna. While only 0.7m high, it provides 1.7dBi gain on 2m and 4.7dBi gain on 70cm and has a conservative maximum power rating of 50W
Cat D-4812

\$69.95

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2m/70cm

Mobile Antenna

The ST 7500 is a high-quality medium-sized dual-band antenna that uses a ground independent design and a tiltable stainless steel whip structure to provide excellent mobile results. It's just 1m long yet provides approximately 3dBi gain on 2m and 5.5dBi gain on 70cm with a maximum power rating of 150 watts. Requires an SO-239 magnetic base
Cat D-4810

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BRAENER

2m/70cm

Hi-Gain Mobile

The ST-7800 is our best long-range dualband mobile antenna, providing high gain (4.5dBi on 2m and 7.2dBi on 70cm), while only 1.5m in length. It incorporates an inbuilt tilt-over mechanism and has a maximum power rating of 150 watts. The ground-independent design also allows the use of gutter or boot/bonnet brackets for easier mounting. Requires an SO-239 antenna base
Cat D-4815

\$119.95

SAVE \$10

BRAENER

SO-239 Magnetic Antenna Mount

A powerful Japanese magnetic mount for use with PL 259 antennas. It's supplied with 4m of quality coax cable and fitted PL 259 plug. Suits small to medium VHF/UHF antennas such as the ST-7500
Cat D-4520



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of 141° W longitude), Northern (above the Arctic Circle) Aleutian Islands (including Kodiak Island, and the Alaskan peninsula south of 58° N), and Central Alaska (including Anchorage and Fairbanks). The remainder may be from any part of KL7. However, of these 10, 4 must be members of Anchorage ARC.

Any modes or bands (except WARC bands) apply. Contacts since 1st January 1955. There is no fee, but ample covering postage is required. A GCR list checked by 3 (three) licensed amateurs or an official at national level is required. The address for applications is:
Anchorage ARC KL7AA
Box 101987
Anchorage Alaska 99510

Alaska Forty-Niner Award

Complete two-way communications with the four prefixes of Alaska, namely AL7 KL7 NL7 and WL7, plus 9 other additional Alaskan contacts for a total of 13. The fee is 10 IRC, or equivalent for the award plus postage. QSL cards or GCR list go to:

ADXA Secretary
C/- PO Box 1614
Kodiak Island Alaska 96615

Ascension Island Awards

1. The Air Bridge Award. Work one station in the British Isles.
2. The Ascension Island Award. Work at least 3 stations on Ascension Island.
3. South Atlantic Award. Work at least one station on each of the South Atlantic dependencies: Ascension, St Helena and the Falklands.

General requirements: no time, band, or mode limitations. GCR list and fee of 10 IRC or US\$5.00 to:

Award Manager
PO Box 2
Ascension Island South Atlantic

From Belgium...The Worked All Belgian Provinces Award

Work all provinces on not more than 2 Amateur bands. No date limits. GCR list and US\$3.00 to:

ONSKL UBA HF Award Manager
VanCampenhout Mat
Hospicestraat 175
B-9080 Moerbeke — Was
Belgium

The Provinces are .

AN Antwerp	LU Luxembourg
BT Brabant	OV East Flanders
HT Hainant	NR Namur
LG Liege	WV West Flanders
LM Limbourg	

*Federal Awards Manager, PO Box 300
Caulfield South VIC 3162

ALARA

Robyn Gladwin VK3ENX*

ALARAMEET

Here is the final report on the long awaited Get Together from Margaret Loft VK3DML, the Co-ordinator.

We now have 90 names on the list with about half of these definitely confirmed. For those of you unable to attend, please send a photo and a short message to go on a pin-up board; that way you can take part and also help us put a face to your voice and call.

If you have a hobby or craft, please bring a small sample along to show; on Saturday night at our Dinner, Marilyn will have her prize winning stamp collection on display. In early September, I will be posting out a map of the area, the final program, and also the black and gold ribbons for your car. If you are leaving before then, please send me an address I can send them to; I will be on the 222 net when possible, also the Travellers' net to keep in contact with you. The 2 m repeater for this area is VK3RCV on 147.150. Please call Judy VK3AGC/NYL or myself when you are within range. We will be listening for you.

We still have room for more, so do come if you can for the weekend or a day, as we would like everyone to share in the activities arranged. Safe travelling and we'll look forward to welcoming you to Castlemaine.

Thank you, Margaret, for taking on the organisation of our triennial YL meeting.

WICEN and ALARA

Three of our members play an important role in WICEN activities. Marilyn Syme VK3DMS, is the Region N Co-ordinator for Victoria, and also the Far South-West Regional Co-ordinator for New South Wales. Marilyn spends much of her time organising communications for various events. However, the Mildura Ski 100 at Easter and the Coomealla Club 500 Off-Road Car Rally in August provide her with the greatest challenge.

In South Australia, Joy Charles VK5YJ, has been involved with WICEN for over 10 years. Although Joy no longer takes on quite as much responsibility as she did in the past, she is still regarded as a leader in the organisation.

Pauline Jones VK2GTB is WICEN State Supply Officer for NSW. She was involved with the International Six Enduro held at Cessnock. It was the first time this event had been held outside Europe and the communications had always been provided by the army. This was a huge event held over 6 days, involving a total of 40 operators. The Hunter region has also hosted the Forster Triathlon, the largest International Triathlon to be held in Australia.

It is to be hoped that other YL amateurs will be encouraged to join Marilyn, Joy and Pauline in this vital service provided for the wider community by one branch of our hobby.

Thank you to Dorothy Bishop for her special WICEN cartoon.

*PO Box 438 Chelsea 3195 VK3ENX@VK3YZW



Club Corner

Camp Quality

This is to inform the amateur radio fraternity that there will be a Special Events Station operating at "Camp Quality" (Kids with Cancer) in the Tweeds Heads area from the 3rd to the 9th April 1994. It will be manned mainly by the VK4 Gold Coast Amateur Radio Society (Inc.). The station call sign will be V12CQ, the operating frequencies will be: 7.050; 14.150; 21.150 and 29.550 MHz, all +/- QRM.

To be in keeping with the children's activities, the hours of operation will be approximately 2300 to 0000 UTC and 0300 to 0500 UTC; these times may be changed if radio propagation and interest in our station warrants re-scheduling.

It is hoped we may be able to operate VHF from the hot air balloon (with the pilot's permission) that will be tethered in the grounds, at a height of 300 ft (100 m).

QSL via VK2CYI, VK2 Bureau. A QSL card will be sent for all contacts.

Don VK2CYI

Old Timers Club

Membership of the Radio Amateurs Old Timers club is open to anyone who has held or has been entitled to hold an amateur operators licence for 25 years or more. Obviously this includes a large number of people who qualified after World War II so it's not just for old fogies from the twenties and thirties.

As from now membership costs only \$5.00 per year and the financial year runs from July to June. Apart from an Australia wide broadcast of news and information on the first Monday of each month, members get two issues of the club magazine "OTN", one in March and the other in September.

The monthly broadcasts originate from Melbourne as follows:

10.00 am 145.700 MHz FM and 7.060 MHz SSB.

11.00 am 14.150 MHz SSB beaming north.

12.00 noon 14.150 MHz SSB beaming west

08.30 pm 3.635 MHz SSB.

Call backs follow each transmission and we invite interested listeners to check in on these occasions.

In Melbourne there will be a luncheon at the Bentleigh Club toward the end of September while in Adelaide there will be the annual luncheon at the Marion Hotel in Mitchell Park. The secretary of the RAOTC is Arthur Evans VK3VQ who is QTHR in any call book and by phone at 03 589 3822.

Allan Doble VK3AMD

Moorabbin & District ARC

Long time members of the club are happy about the decision taken about five years ago to update the club station VK3APC and install it in a dedicated enclosure. A lot of our younger members have taken an increasingly active part in the operation of the station and its maintenance. They run the club net on 3.567 MHz every Monday night at 8 pm and this allows operators who come across the net to gain points for the very attractive certificate which is available for working VK3APC club members on the net. It's not very hard to earn the wallpaper in one or two nights.

Contesting through VK3APC is another side of the club's activities which is building up. VK3APC came second in the open phone multi-operator section of the John Moye contest and we expect to be well up in the score for the Novice contest. Plans are well in hand for taking part in the RD contest.

A new activity is the Hobby Night each Tuesday evening in the club rooms when Chris VK3JEG is on hand to help members with gadgets they are building or have built without success. This is the sort of activity for which the club was famous in its early days.

At the annual general meeting in July the following office bearers were elected: President: Denis Babore VK3BGS. Secretary: Keith Turner VK3CWT. Treasurer: Morrie Lyons VK3BCC. Projects Manager: Harold Hepburn VK3AFQ.

Membership fees have been increased a little after careful consideration and are now: Joining \$10. Full member: \$20. Students/Pensioners: \$15. All correspondence should be addressed to the secretary at PO Box 58 Hightett VIC 3190

Allan Doble VK3AMD

Shepparton and District ARC Inc

Shepparton 1993 Communications Day

Due to ever increasing attendances the Shepparton and District Amateur Radio Club has moved its 1993 Communications Day to a larger venue. It is the Shepparton Youth Club Hall, located in Rowe Street. The event will take place on Sunday 26th September. Doors will open at 10 am.

The larger venue will allow the commercial trade companies, specialist groups and those wishing to dispose of preloved equipment more room to spread out.

Admission remains at \$5 per head or \$15 per family. After the five star meal last year, the catering committee suffered burnout and this year catering will be provided by another club. A little more basic but more varied choice will be the order of the day. The usual free tea and coffee will be available all day.

Major traders have again indicated that they will be attending and the usual show specials will allow you to save plenty on the purchase of new equipment. Several guest speakers have expressed interest in leading discussions relevant to the hobby of amateur radio.

If you have equipment that you wish to dispose of it is necessary that you pre-book a table. This will give you the best chance of a prime display location. Just arriving on the day without booking may see you banished to the back corner or, worse still, missing out as the club is hiring the tables for this use.

Requests for disposal tables and payment must be made in advance and in writing to the club at PO Box 692, Shepparton, 3630. Table cost is \$15 per 2 metres plus the normal admission charge per person.

Talk-in will be provided by VK3SOL on VK3RGV frequency 146.650 MHz. Shepparton is located 180 km north of Melbourne on Highway 39.

Members of the Shepparton and District Amateur Radio Club look forward to seeing you on Sunday 26th September at the 1993 Communications Day.

Peter VK3YF
Publicity Officer

Ballarat Amateur Radio Group

On Friday the 30th July the Ballarat Amateur Radio Group held their Annual General Meeting. The meeting was well

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attended and resulted in the election of the office bearers who will be conducting the affairs of the club for the coming year.

The Committee for 1993/4 will be headed by:

PRESIDENT Cliff Bilton (VK3CCB)

SECRETARY Geoff Smith (VK3ADB)

TREASURER Harry Hekkema (VK3KGL)

The retiring Secretary, Jim Wright VK3CFB, was awarded Life Membership of BARG in appreciation of his 10 years service to the club in that position.

The new committee is already in action making preparations for the Ballarat Hamvention which will be held on October 30/31. Details will be forthcoming as they are confirmed, so watch this space.

Norm D'Angri VK3LBA
Publicity Officer BARG

Granite Belt Amateur Wireless Group

We are a self-managed team NOT a club. We don't have a hierarchy, office bearers, fees, constitution, fragile egos or other BARRIERS. We all have different foci within our hobby, but our common bond is WIRELESS, specifically:

- you own and operate VALVE HF equipment (excluding power amplifiers)
- you WANT to belong
- you reside in the Queensland "Granite Belt" which is a trapped rock corridor extending from the VK2 border to Dalveen and about 20 km wide. Some of the inclusions are Ballendean, Glen Aplin, Sevenlea, Stanthorpe, Applethorpe, Arniens, Pozieres, Passchendael, The Summit, Thulimbah, Cottonvale and Dalveen.
- you are interested in amateur radio. Our group station (courtesy VK4CMY aka VK5HP "Doc") is RACAL RA17 and AR88 receivers, FTDX560, FT100 transceivers, SB201 and FLDX2000 amplifiers plus numerous other valve type HF rigs coupled to 80, 40 and 20 metre ground planes with extensive radial systems (1.5 hectares).

The Granite Belt is the second-most ferocious lightning activity area in Australia, hence the focus on valve equipment in which induced voltages do little damage. VK4CMY "Doc" has lost 2 VCRs and 2 TV sets in 18 months due to induced voltages in solid state equipment. So we are not time-warped weirdos, there is a very practical reason for our focus on valves other than that they are like steam engines — ageless!

We worked the John Moyle contest in '93 under VK4AKH Lurch's call and plan to attack a few more contests in the future. Some of our members are on alternative power and this affects our involvement,

but the range of interest covers collecting AM radios, collecting valve linear amplifiers, SECTA activity (4WD trekking), packet, CW, QRP, portable operation, mobile activity, rolling-out-own (home building), crystal sets, old magazine and ARRL handbooks, DX chasing, antenna building, and above all, helping each other.

We prefer to swap and barter rather than to buy or sell. Our group members run FT200, FT101B, FTDX401, FTDX560, TS520, Drake, Hallicrafters, Heathkit, AWA, Weston, Hammarlund, Racal, Collins and Signal One HF equipment and we enjoy our politics-free hobby!

"Doc" VK4CMY Dalveen Qld

Radio Old Timers Club of South Australia

The annual luncheon will be held on Tuesday 26th October 1993 at 12 noon at the Marion Hotel, Marion Road, Mitchell Park. This year we invite amateurs 60 years and over who have held, or are eligible to hold, an Amateur Radio licence for 10 years and over to join us.

Committee members at present are:
President John Allan VK5UL (Ph 344 7455)

Secretary Ray Deane VK5RK (Ph 271 5401)

Jack Townsend VK5HT (Ph 295 2209)
Lew Schaumloffel VL5AKQ (Ph 263 0882)

RSVP by 22nd October 1993 to the above. Ladies are welcome.

Those using public transport — STA Bus 243 alighting at stop 24.

R Deane VK5RK

The Australian Naval Amateur Radio Society

The AUSTRALIAN NAVAL AMATEUR RADIO SOCIETY brings together all radio amateurs and interested short wave listeners in Australia who have a professional naval or maritime background. This is an Australian society controlled by Australians. All funds raised

are used to benefit members within Australia. We are a nationwide society, fully structured and with administration facilities in place. Along with our name, the Society's logo shows a stockless anchor representing the sea, "flashes" representing radio and the seven-pointed Federation Star of Australia.

Membership is open to all persons who are either serving in, or are retired from, the Royal Australian Navy, WRANS, Naval Reserves or the Australian Merchant Navy. Membership is also open to those who have served in ANY foreign navy or merchant navy and who are now Australian citizens, or permanent residents in Australia. Foreign amateurs who have similar nautical backgrounds can become Associates of the ANARS but without voting privileges. Hence this Society cannot come under foreign control.

Until now those interested in belonging to a Naval or Maritime amateur radio society have been forced to join overseas organisations. Not only has 75% of the money raised in Australia gone to the benefit of overseas amateurs, but the most popular of the overseas societies is under the control of its Ministry of Defence. To expect Australian amateurs to join a society controlled by a foreign government is unacceptable in the 1990s.

On the 9th of August this year the AUSTRALIAN NAVAL AMATEUR RADIO SOCIETY was officially launched by its Headquarters station in Canberra using the callsign VK1RAN. The 9th of August is a significant date for the Royal Australian Navy. It is the anniversary of the World War Two Battle of Savo Island, in which the Australian heavy cruiser HMAS CANBERRA was sunk.

All interested amateurs and short wave listeners are invited to contact the Honorary Secretary of ANARS at 487 McKenzie St, Laverton, NSW 2641 for further details.

Terry Clark VK2ALG Hon Secretary

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CONTESTS

Peter Nesbit VK3APN — Federal Contest Coordinator*

Contest Calendar Sep-Nov '93

Sep 45	All Asia DX Contest [SSB]	(Jul 93)
Sep 5	Bulgarian DX Contest	(Aug 93)
Sep 11/12	World All Europe [SSB]	(Jul 93)
Sep 18/19	SAC DX [CW]	(Jul 93)
Sep 25/26	SAC DX [Phone]	(Jul 93)
Sep 26	CQ WW RTTY DX Contest	(Jul 93)
Oct 23	VK/ZL/Oceania DX Contest [SSB]	
Oct 3	RSGB 21/28 MHz Contest [SSB]	
Oct 9/10	VK/ZL/Oceania DX Contest [CW]	
Oct 9/10	Iberoamericano Contest [SSB]	
Oct 13/14	YPL Anniversary Party [CW]	
Oct 19/20	World All Germany Contest [Mixed]	
Oct 17	RSGB 21/28 MHz Contest [CW]	
Oct 23/24	CQ WW DX Contest [Phone]	
Oct 27/28	YRL Anniversary Party [SSB]	
Nov 17	HA-QRP 80 m CW Contest	
Nov 13	ALARA YLCM Contest [Mixed]	
Nov 13/14	WAE RTTY DX Contest	(Jul 93)
Nov 13/14	OK-YL/CW Contest	
Nov 13/14	ARRL International EME Competition	
Nov 27/28	CQ World-Wide CW DX Contest	

In the next couple of months there will be a variety of contests catering for all tastes with, of course, our own VK/ZL/Oceania DX Contest in the middle. The rules are little changed from previous years, apart from the introduction of a multioperator category, separate scoring for each band (so entrants can compare their performance with others on a band by band basis), and the ability to submit logs on disk.

Speaking of disk logs, the number of contacts made in some contests is staggering. Consider the CQ WPX contests, where entrants routinely work thousands of stations. It is easy to see that manual checking of scores in hundreds of such logs represents a massive undertaking. To ease this task ARRL and CQ have introduced log checking programs, and disk logs are now entered directly into the computer, which cross-checks them automatically. To close the gaps, high scoring logs received on paper are scanned or typed in by hand.

One of the things these programs do is to report the incidence of "uniques" for each entrant (ie callsigns which don't appear in any other logs), which generally ranges from about 2 to 15%. Careful study has shown that most "uniques" are due to calls being miscopied, rather than the other stations making one contest QSO and then retiring. Many managers of overseas contests are now encouraging logs to be forwarded on disk, and it probably won't be long before it becomes generally mandatory for logs to be on

disk, if the number of contacts exceeds a prescribed threshold.

This is good news for entrants, as mistakes will be more likely to be picked up, and the results will more accurately reflect actual standings. The faster operators will need to be more meticulous in their receiving accuracy and, except for casual contesters, we will all need to gear up for computerised logging (or log formatting after the event). These are exciting times, and I hope to report soon on the preferred format for disk logs.

Many thanks to the following for their help, information, and inspiration: HA5JJ, OK2SW, VK3DMS, VK5AGX, ZL1AAS, ZL1BVK, CQ, QST, and Radio Communications. Please keep the letters coming, including any spare copies of rules or results. Until next month, good contesting!

SEANET DX Contest Update

The address shown in last month's column is incorrect. According to QST (for this year's contest) it should be: "SEANET 93, Maxwell Road PO Box 2728, Singapore 9047, Singapore."

Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April AR.

RSGB 21/28 MHz DX Contest

Oct 3 (Phone), Oct 17 (CW); Sunday 0719 z.

This year the phone section of this contest occurs one week earlier than usual, and will overlap the VK/ZL/Oceania phone section by 3 hours. This should provide the opportunity for plenty of contacts with the UK on 21 and 28 MHz, and perhaps improve upon last year's poor turnout of VKs and ZLs in the 21/28 MHz Contest!

The object is to work as many UK stations as possible on 21 and 28 MHz (UK includes GI, but not EI). Categories are: single operator, multioperator, and SWL. The CW section includes a QRP category for stations not exceeding 10 W output. Entrants using packet or DX spotting nets must enter the multioperator category. The recommended frequencies for phone are 21150-21350 and 28450-29000 kHz.

Send RS(T) plus serial starting at 001; UK stations will add their county code. Score 3 points per QSO. The final score equals the total points times the total multiplier (both bands). (The same

multiplier may be claimed on both bands) Use a separate log for each band. Send logs and summary sheets, to arrive by 1st December (phone) or 13th December (CW), to: RSGB HF Contests Committee c/o G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England. A comprehensive range of awards is offered.

SWLs may only log UK stations making contest QSOs with overseas stations. SWL logs should be headed time UTC; callsign heard, number sent by that station; callsign of station being worked, new multipliers, points. In the column headed "station being worked" the same callsign may only appear once in every 3 QSOs except when the logged station counts as a new multiplier. HF TX licence holders are ineligible to enter the SWL section.

IberoAmericano Phone Contest

20 z Sat Oct 9 — 20 z Sun Oct 10.

This phone only contest is held each year on the weekend before October 12 to commemorate the anniversary of the discovery of America, and provides a good opportunity to work the rarer Latin-American areas. Classes are single and multioperator (single TX); QRP max 5 W output; SWL. Exchange RS plus serial number. Bands 1.8-30 MHz. Score 3 points per QSO with a Latin-American station, 1 point with others. Multipliers are Latin-American countries: CE CO CP CR CT CX CS DU EA HC HI HK HP HR HT KP4 LU OA PY TG TI YE VS YV ZC.

Additional multipliers may be claimed for contacting "multiplier stations", which can be identified by a commemorative prefix from a Latin-American prefix block followed by the year (93). Last year they were EG92G and EH92G. Final score is total QSO points times total multipliers, all bands SWLs: the same station cannot be logged for more than 15% of the total; also the same station can only be logged again after 5 other entries. Send logs by 30th November to: X-Concurso Iberoamericano, Gran Via de les Corts Catalanes, 594, 08007 Barcelona, Spain

YLRL Anniversary Party

Oct 13/14 (CW); Oct 27/28 (Phone), 1400 z Wednesday to 1359 z Thursday

These midweek contests are open to YLs only, worldwide. 1.8-30 MHz Stateside frequencies, ± 15 kHz, are (CW) 3555, 7055, 14055, 21135, 28195, (SSB) 3955, 7255, 14265, 21395, 28395, (or as authorised).

Exchange RS(T), QSO number, and US State, VE Province, or DXCC Country. Oceania YLs score 2 points per QSO outside Oceania, 1 point per QSO within

Oceania. Final score is the total QSO points times total States, Provinces, and DXCC Countries worked. A bonus multiplier of 1.5 applies for 100 W max output (CW) or 200 W pep output (SSB).

Send separate logs for CW and phone sections, with summary sheets, to be received by 30 November to: L. Carla Watson, YLRL Contest Logs, 473 Palo Verde Drive, Sunnyvale, CA 94068, USA.

Worked All Germany Contest (Phone/CW)

15 z Sat Oct 16 — 15 z Sun Oct 17

The object of this contest is to promote contacts between Germany and the rest of the world on 80-10 m. DX packet spotting is allowed for all stations. Classes (SSB or CW) are: single operator, multioperator; QRP (max power ?); and SWL. Send RS(T) and serial number; German stations will send RS(T) and DOK number. Score 3 points per QSO with a German station. Multipliers are German districts (determined by the first letter of the DOK number). Final score equals points times multiplier. Send logs and summary sheets, postmarked no later than 30 days after the contest, to: Klaus Voigt DL1DTL, PO Box 427, D-8072 Dresden, Germany.

CQ WW DX Contest

Oct 23-24 (Phone); Nov 27-28 (CW).

0000 z Saturday to 2400 z Sunday
Sponsored by CQ Magazine, these contests are undoubtedly the premier HF events of the year, and present the opportunity to work many rare countries and zones even with modest equipment. They are open to all stations world-wide, on 1.8-29.7 MHz (no WARC bands). Categories are: single operator; single operator low power (max 100 W output); single operator QRP (max 5 W output); single operator assisted (for those using DX spotting nets); multioperator single transmitter; and multioperator multitransmitter.

Single operator stations can enter as single or all band, and can change bands at will. Multioperator stations must enter as all band. Multioperator single TX stations must stay on a band for at least 10 minutes, EXCEPT that one — and only one — other band may be used during the 10 minute period, if — and only if — the station worked is a new multiplier. Multi TX stations are exempt from this rule, but can only radiate one signal per band at any one time.

Exchange RS(T) plus CQ zone (29 = VK6/8/9C, 30 = other VK). Score 3 points for QSOs with stations in a different continent, and 1 point for QSOs with stations in the same continent (for VKs this means Oceania as defined for WAC).

Stations in the same country or call area can be worked for additional multiplier credit, but have zero points value. The total multiplier is the number of DXCC countries plus zones worked. Final score equals total points times total multiplier.

Use a separate log for each band. Show new multipliers in the log the first time they are worked, and duplicates with zero points. Entrants are encouraged to include a "dupe sheet" for each band, which becomes mandatory for 200 QSOs or more. Computer logs are welcome, and must be in ASCII on DOS disk, using separate files for each band, eg VK7AAA.20 for a 20 m log; alternatively in K1EA "CT" .BIN format, eg VK7AAA.BIN. Label the outside of the disk with the callsign, the files included, mode, and category. Disks MUST be accompanied by a paper printout satisfying logging instructions. The committee may request a disk from high scoring stations to enable the log to be checked by computer, if the log originally submitted was a computer printout.

Include a signed summary sheet, showing power output for low power and QRPp entries, and send the log postmarked by December 1 (phone) or January 15 (CW) to: CQ Magazine, 78 North Broadway, Hicksville, NY 11801, USA. Indicate Phone or CW on the envelope. Numerous awards, trophies and plaques will be awarded to the leading entrants in the various categories and countries.

County Codes for RSGB Contests

As RSGB contests are quite popular in VK, the following list of UK county codes should be helpful for entrants in those contests:

Alderney	ALD
Co Antrim	ATM
Co Armagh	ARM
Avon	AVN
Bedfordshire	BFD
Berkshire	BRK
Borders	BDS
Buckinghamshire	BUX
Cambridgeshire	CBE
Central	CTR
Cheshire	CHS
Cleveland	CVE
Chwyd	CLD
Cornwall	CNL
Cumbria	CBA
Derbyshire	DYS
Devon	DVN
Dorset	DOR
Co Down	DWN
Dumfries & Galloway	DGL
Durham	DHM
Dyfed	DFD
Essex	ESX

Co Fermanagh	FMH
Fife	FFE
Mid Glamorgan	GNM
South Glamorgan	GNS
West Glamorgan	GNW
Gloucester	GLR
Grampian	GRN
Guernsey	GUR
Gwent	GWT
Gwynedd	GDD
Hampshire	HPH
Hereford & Worcester	HWR
Hertfordshire	HFD
Highlands	HLD
Humberside	HBS
Isle Of Man	IOM
Isle Of Wight	IOW
Jersey	JER
Kent	KNT
Lancashire	LNH
Leicestershire	LEC
Lincolnshire	LCN
Greater London	LDN
Co Londonderry	LDR
Lothian	LTH
Greater Manchester	MCH
Merseyside	MSY
Norfolk	NOR
Northamptonshire	NHM
Northumberland	NLD
Nottinghamshire	NOT
Orkney	ORK
Oxfordshire	OFE
Powys	PWS
Shropshire	SPE
Sark	SRK
Shetland	SLD
Somerset	SOM
Staffordshire	SFD
Strathclyde	SCD
Suffolk	SFK
Surrey	SRV
East Sussex	SXE
West Sussex	SXW
Tayside	TYS
Tyne & Wear	TWR
Co Tyrone	TYR
Warwickshire	WKS
Western Isles	WIL
West Midlands	WMD
Wiltshire	WLT
North Yorkshire	YSN
South Yorkshire	YSS
West Yorkshire	YSW

Results of 1992 RSGB 21/28 MHz DX Contest

Phone, Oceania (Posn/Call/Score):	
1 ZL1AAS*	2754
2 VK9CC	174
Phone, SWL (Worldwide, non-UK):	
5 Alan Winter (VK6) 2633	
CW, Oceania (Posn/Call/QSOs/Mult/Score):	
35 VK8AV* 58 33	5440
59 VK4TT 33 22	2024
* = award winner	

Results of 1992 ARRL 10 m

Contest

VK2APK was 3rd worldwide in the DX Mixed Mode Low Power section. In the DX CW Low Power section, VK8AV was 5th worldwide and VK4XA 8th. VK8AV also had top score for CW in Oceania.

Call/Score/QSOs/Mult/Power Output (A<5 W, B<150 W, C>150 W):

Mixed Mode:

VK2APK	636,916	1132	161	B
VK8BE	10,906	101	41	B
P29JA	234	9	9	B

Phone Only:

VK4DMP	71,022	399	89	B
VK2GAH	53,690	455	59	C
VK4ICU	23,548	203	58	B

CW Only:

VK8AV	499,500	999	125	B
VK4XA	408,020	887	115	B
VK4TT	228,492	577	99	B

VK2AYD	153,032	407	94	B
VK4XW	7,656	58	33	B

Results of 1992 ARRL EME Competition

VK5MC scored 48,000 points in the single operator multiband category with 3 QSOs on 144 MHz, 15 on 432 MHz, and 6 on 1296 MHz. There were no other VK entries.

1992 VK-ZL-Oceania DX

Contest Rules

WHEN: This contest takes place each year on the 1st and 2nd full weekends of October (SSB and CW sections respectively). For 1993 the dates are: SSB: 2/3 October 1993, 1000 UTC Saturday to 1000 UTC Sunday CW: 9/10 October 1993, 1000 UTC Saturday to 1000 UTC Sunday

OBJECT: The object is for stations throughout the world to contact as many stations in VK, ZL and Oceania as possible on 1.8-30 MHz (no WARC bands). The boundaries for Oceania are as for WAC.

Contacts between different countries in Oceania are permitted (eg VK to ZL, ZL to SW, VK4 to VK9), and contacts within the same country in Oceania are permitted on 160 and 80 m only (eg VK5 to VK6, ZL4 to ZL4, 3D2 to 3D2).

CATEGORIES: Single operator all band; single operator single band, multioperator all band; and SWL. Single operator stations are where one person performs all operating, logging, and spotting functions. The use of DX spotting nets will place the station in the multioperator category.

EXCHANGE: RS(T) plus a 3 digit number starting at 001 and incrementing by 1 for

each contact. If 999 is reached, revert to 001.

MULTIPLIER: On each band this is the number of prefixes worked on that band. A "prefix" is the letter/numerical combination forming either the first part of the callsign, or else the normal country identifier for stations using their home callsign in another DXCC country. For example: N8, WB, AG8, HG7, HG73 are all separate prefixes. The prefix for both N8ABC/KH9 and KH9/N8ABC is KH9. Portable designators without numbers are assumed to have zero after the letter prefix, eg N8ABC/PA becomes N8ABC/PA0. Any calls without numbers are assumed to have a zero after the first two letters, eg RAEM becomes RA0EM. Suffixes indicating maritime, mobile, mobile, portable, alternate location, and licence class do not count as prefixes (eg /MM, /M, /P, /A, /E).

SCORING: For each contact score 20 points on 160 m, 10 points on 80 m, 5 points on 40 m, 1 point on 20 m, 2 points on 15 m, and 3 points on 10 m. The score for each band is QSO points for that band times the multiplier for that band. The total score is the sum of the band scores.

LOGS: Use a separate log for each band, with times in UTC. Show new prefix multipliers the first time they are worked. Logs should be checked for duplicates, correct points, and prefix multipliers. Logs must be accompanied by a sorted list of

prefix multipliers, and a summary sheet showing callsign, name, address, category, score calculations, and a signed declaration that contest rules and radio regulations were observed. Logs may alternatively be submitted on DOS disk in ASCII format, although the summary sheet must be on paper. Interesting anecdotes, and any comments on the contest are also invited.

SWL LOGS: SWL logs should show date/time, the callsign of the station heard, the callsign of the station being worked, RS(T) and serial number sent by the heard station, points claimed, and new multipliers.

LOG SUBMISSION: Send logs postmarked by 15 November 1993 (SSB) or 22 November 1993 (CW) to: Peter Nesbit VK3APN, VKZJL/Oceania DX Contest Manager, c/o WIA, Box 300, Caulfield South, Victoria 3162, Australia. Overseas entrants please use airmail. Indicate SSB or CW on envelope.

AWARDS: Special certificates will be awarded to the top scorers on SSB and CW in each category in each prefix area, and on each band for single band entries. Where returns justify, 2nd and 3rd place awards may also be made.

73

Peter VK3APN

*PO Box 300 Caulfield South VIC 3162

Divisional Notes

Forward Bias — News from the VK1 Division

Chris Davis VK1DO

Locals had a hectic time during July and early August preparing their stations in readiness for the annual Remembrance Day Contest which saw a strong contingent of locals on both HF and VHF. It is always very pleasing to hear various calls, which are conspicuous by their absence throughout the rest of the year, appear over the RD weekend and renew friendships.

The trend among students who are currently attending our courses and classes to attend our monthly meetings is good to see. Many of our students, and indeed novices, seem to have felt disinclined to make an appearance prior to completing their full calls, so I am impressed to see the existing networks of friends and acquaintances moving their networks into contact with the broader amateur community. I hope that with the experience of a year of observing how

some of us old hands do things, they will feel inclined to contribute their ideals and energy by nominating for next year's committee. An injection of new ideas and objectives is always beneficial and I personally look forward to the innovation and general breath of fresh air that we might all enjoy from new blood influencing the division at the committee level.

Please note the date for our September general meeting which will be held on Monday September 27th commencing at 8.00 pm in the studio room of the Griffin Centre. Our topic for the September meeting will be a talk by Ian Cowan VK1BG, on Radio Communications and Civil Aviation.

A few months ago I reported to members that I had had some interesting contact with various members who had not been at a monthly meeting for sometime. This contact was brought about by the excessive QSL cards which had accumulated in their name at the office. Many of these old hands were very pleased to see me and have a brief chat, however, many were quick to say that they

would love to get back into the routine of monthly meetings, but they lacked confidence or inclination to go out at night. In my broadcast item I suggested that a few more of the locals check with some of their mates to see whether they were aware of the meeting night and perhaps pool their resources for transport. I suppose I am naive in thinking that people might actually take such an initiative to maintain contact with old friends but I was quite taken aback to hear two locals chatting on FM, one living two suburbs from the other, with one admitting that he had difficulty getting to the meeting these days and the other more mobile member just agreeing with him as to how hard it can be. That was it. No offer of help. Surely we can all do a lot more than that. I know we admit to being eccentric and perhaps even self centred in our pursuits, but this total lack of Initiative is pathetic. If each person who regularly attends our meeting was to ring two others in relation to the meeting night and prompt their memory or offer transport, our numbers would double.

Please remind your interstate friends about this years Technical Symposium which will be held on Saturday, October 30th at the Southern Cross Primary School in Scullin. Contact personnel for this year's event are Gavin Berger VK1EB on 06-258 5390, and Neil Pickford VK1KNP on 06-258 7803 or 274 8422 at work. Suggestions for topics or other general enquiries in relation to the symposium would be welcome.

Drag out that unwanted junk for the October meeting. Our buy and sell trash and treasure night will have numerous keen buyers and sellers with the recent swelling in our local ranks and the long break since our last junk night. Cheers for now.

VK2 Notes

Tim Mills VK2ZTM

Council

During July there were some changes of Council Members. In the election ballot this year there were 12 candidates for the 9 positions. However, two of the successful candidates, Sandy Brucsmith VK2AD and Eric Reimann VK2WH decided not to take up their positions. This left vacancies on Council which were filled by John Simon VK2XGJ and Bob Yorston VK2CAN who were unsuccessful candidates in the ballot. The Council Members and their respective portfolios are:-

Terry Ryeland VK2UX — President, Education Officer & Alt Federal Councillor

John Robinson VK2XY — Vice President, Alt Federal Councillor, Security Officer, QSL Bureau Liaison & Parramatta Property Officer

Roger Harrison VK2ZTB — Vice President, Secretary/Treasurer, Federal Councillor, Membership Officer, Publicity and Advertising

Tim Mills VK2ZTM — Dural Property Officer

Roger Henley VK2ZIG — Member Services

John Simon VK2XGJ — Technical Advisory Liaison and joint Parramatta Property Officer

Julie Kentwell VK2XBR — Joint Publicity and Advertising

Cesar Miranda VK2TCM — NSW Technical Advisory Committee Chairman
Bob Yorston VK2CAN.

Happenings

There is a Trash and Treasure in the Parramatta car park on Sunday afternoon the 26th September....The next and final exams for this year will be conducted by the Division at Amateur Radio House in November....For Sales have been included for Members in the VK2WI broadcast. These can only be accepted by mail or FAX, no packet submissions. If any item is to be repeated it must be resubmitted....A couple of years ago we had a successful round up of 810 valves for the AM transmitters at VK2WI. This time we are looking for 807s for the same transmitters. If you can help please contact the Parramatta office....Please note the early delivery of news items for the broadcast by mail or FAX. Have them arrive by noon Friday so there is time to pass them on for inclusion. Arrangements are being made to FAX material direct to VK2WI. Details later.

New Members

M.B. (Malcolm) Brassington VK2NMB Merimbula
A.A. (Angus) Campbell VK2CY Greenwich
K.G. (Kingsley) Forbes-Smith VK2KFS Northbridge
J. (John) Nolan Assoc Kogarah Bay
A.J. (Tony) Smith VK2BTS South Grafton

VK3 Notes

Barry Wilton VK3XV

Council for 1993-94

All sitting councillors re-nominated to serve for a further term.

Elected councillors are: Jim Linton VK3PC, Barry Wilton VK3XV, Rob Halley VK3XLZ, Peter Mill VK3ZPP, George Hunt VK3ZNE and Bill Trigg VK3JTW.

It was resolved that councillors continue with their portfolios, and Jim VK3PC was re-elected as president.

Barry VK3XV continues as secretary, Rob VK3XLZ is treasurer, and Peter VK3ZPP is VTAC chairman. George VK3ZNE and Bill VK3JTW are responsible for putting the weekly VK3BWI broadcast to air.

Life Member

Jim VK3PC was granted life membership by the Annual General Meeting in recognition of his long and dedicated service.

Jim has served as president for eight years in the last decade and been responsible for many achievements. He has been prominent in the field of public relations and has been directly responsible for gaining much favourable media coverage for the hobby, and continued to work toward improving Amateur licence conditions and examination, and education services.

New Radio Club

The WIA East Gippsland Zone has, with the approval and assistance of the Victorian Division Council, been disbanded and reconstituted as the East Gippsland Amateur Radio Club. Like other former zones it had difficulty in complying with, and meeting, the cost of new stringent corporate legal requirements. The club will continue to serve local WIA Victoria members, and be the focal point of amateur radio activity in the area.

Club and Zone Net

The regular Sunday night 80 metre on-air meeting known as the Zone and Club Net has been renamed the WIA Victoria Club News Net.

Remembrance Day contest

Did you take part in the Remembrance Day Contest? If the answer is "yes" then make your participation count by submitting a valid entry.

Victoria has won the contest for the past three years because an increasing number of VK3 radio amateurs have submitted entries. As well as submitting your log, encourage your friends to do likewise.

Recruiting Brochure

Following a few "hitches" along the way, the new WIA Victoria publicity brochure has been printed. The fold-out brochure covers many aspects of our hobby and the role of the WIA.

It has been specially prepared to target both existing radio Amateurs who are not currently members of WIA Victoria, and prospective radio amateurs. The professionally designed brochure uses a combination of pictures and text to promote WIA membership and entry into our hobby.

The new publication will be made available to all affiliated radio clubs and selected retail stores within the next few weeks.

How's DX

Stephen Pali VK2PS*

When you listen on the bands these days the common subject of the discussion is, among others, propagation. Solar flux, A index, K index, T index words familiar to some and unknown to others, are floating around. Those listeners who are not up-to-date on these subjects are confused. To help you understand these numbers, here is some useful information. Some of it was supplied by the Chatswood, NSW office of the Ionospheric Prediction Service (IPS) Radio and Space Services.

The ten-centimetre solar flux is at a frequency of 2800 MHz (wavelength of 10.7 cm). It is the measurement of the noise the sun emits. Collection of these figures was started shortly after the war, in 1946. The solar flux is a good indicator of the sun's activity. Unlike the sunspot number, the value of the 10 cm flux never drops to zero even during solar minimum. The lowest value to which it drops is approximately 67 which corresponds to the sunspot number zero. The values are quoted daily and are measured by the Ottawa radio observatory.

The magnetic A Index is designed to measure solar particle radiation by its magnetic effects. In other words the index is a measure of the variability ("storminess") of the earth's magnetic field during a 24 hour day. The measurements are from the Fredericksburg Observatory in the USA, and their values are typical of a mid-latitude site. Levels of magnetic disturbance are described in the following terms : 0 up to 7 = Quiet, 8 up to 15 = Unsettled, 16 up to 24 = Active, 25 up to 35 = Minor Storm, 36 and above = Major Storm.

The K Index is a measurement of the maximum disturbance in the earth's magnetic field during a three hour interval. The A Index is calculated from eight three hour figures of the K Index. Both A and K measure the same disturbances but they are presented on different scales. The K Index goes from 0 to 9 and the A Index from 0 to 400. As an example, the K index of 3 is equal to A 15, a K index of 5 is equal to A 48, and a K index of 6 equals A 80. It can be said that the higher the value of the solar flux and the lower the level of the geomagnetic activity (A Index 24 hours, K index every 3 hours) the better are the propagation conditions. Conversely, the lower the solar flux and the higher the geomagnetic activity the poorer will be the conditions.

The Australian T Index is a measure of

the average level of the ionospheric critical frequencies available on a particular day. The higher the value of the T Index the higher the ionospheric critical frequencies and Maximum Useable Frequencies (MUF) on HF circuits for that day. The daily T Index is based on data from Australian ionospheric stations and so is most applicable to HF circuits with reflection points in the Australian region

Mellish Reef VK6M

September 19th to 28th will see the long awaited activity on Mellish Reef. The callsign of the expedition will be released just prior to commencement of the operation. Frequencies to be used are as follows. CW: 1.825, 3.505, 7.025, 10.107, 14.005, 18.077, 21.002, 24.897, 28.445, 50.120 SSB: 1.825, 3.799, 7.123, 14.195, 18.145, 21.295, 24.945, 28.445, 50.120. RTTY: 14.080, 21.080. FM: 29.445. Major support for the expedition came from Dick Smith Electronics which supplied five Yaesu FT-990 transceivers and two FL-7000 amplifiers; and from Entronics which supplied the T33 tri-band yagi and Coman Antennae with supply of the 20 m monoband Yagi. QSL manager for the expedition is Bill VK4CRR (26 Iron St, Gympie, QLD 4570) and QSLing will commence on December 1st. The expedition will not be able to grant personal skeds. However, with five stations on the air on a 24 hour basis, everybody should have a good chance to work Mellish. Australian novices will have the opportunity to work the expedition on the 80, 15, and 10 metre novice bands.

New French Prefixes

Some time ago the French administration changed the prefixes of its overseas Departments and Territories (see May 93 AR). The mainland French callsign structure now has been changed also. Changes are as follows FA-no change, FB-no change, FC1 > F1, FD1 > F5, FD6 > F6, FE1 > F5, FE2 > F2, FE3 > F3, FE5 > F5, FE6 > F6, FE8 > F8, FE9 > F9, FI > F5, FF (Club stations) > F# KAA-KZZ, CEPT (European Common Licence) > F2 - F9.

IOTA Islands

During the past three to four years "chasing islands" has become very popular among the VK-ZL DX fraternity. The UK based "Islands on the Air" program promotes Expeditions working from or to Islands, all of which have been

allocated an IOTA reference number, or working from a new island hoping that it will be accepted as a "new" reference number. One could collect 100, 200, 300 or more islands. In the last month there were, among others, two interesting activities from IOTA islands. The Calgary Amateur Radio Association (CARA) activated CH8MNP from Cameron Island (NA-009) from August 18th to 25th. Cameron Island is only about 80 km away from the North Magnetic Pole and lies in CQ Zone 2 in the Canadian Arctic, almost on the edge of the permanent polar ice. The north Magnetic Pole is the point toward which north-seeking compass needles point. This pole can move many kilometres in a few years. QSL to CARA, PO Box 592, Station M, Calgary, Alberta, T2E 5J6, Canada

Much further south, off the Thai mainland, the DXpedition led by HS1AAM was very active from 22nd July to the end of that month on all bands from Ko Samet Island (AS-107) which lies 200 km east of Bangkok at 12° 36' N and 101° 27' E. They were active on SSB, CW, RTTY, FM and Packet on five bands. The 15 operators did a very good job of putting the new prefix E22DX and the new island into the IOTA directory. QSL goes to HS1HSJ Viroj Supapak, PO Box 7, Bangkok 10220, Thailand.

Smart Log

Amateur Radio Logging System

The complete fully integrated log and data base for IMB PCs.

Features include:

Country, Prefix, CQ/ITU Zones Lists
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NZ Branches/Counties

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Extensive Contact statistics

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Demo disk \$6.00

Send your Cheque with Name,
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Disk Size to

Philip Rayner, VK1PJ
33 Willoughby Cres,
Gilmores ACT 2905

See Review in July '93 Amateur Radio

Incidentally, if you are looking to work an amateur station near the South Magnetic Pole, then look for Francis FTSYE who can be heard quite regularly with strong signals in VK He is located at the French antarctic research station in Terre Adelie at the Dumont D'Urville base, 68° 0' S and 140° 0' E. Francis is near the South magnetic pole which also moves as much as 8 kilometres in a year.

Penguin Islands ZS0PI

The Penguin Islands (IOTA AF-055) are a chain of 13 tiny islands which are located along the coast of Namibia (V51) adjacent to the diamond fields, north and south of the Namibian port of Luderitz, and south of Walvis Bay (ZS9). The islands belong to the Republic of South Africa and are administered by the Cape Province of South Africa.

Access to the Penguin Islands is very restricted because the islands are a bird sanctuary and the habitat of many hundreds of thousand of sea birds including some endangered species. But, there are no penguins. The name of the islands is a misnomer. As there is no habitation on Penguin Islands, save a few abandoned guano filled old buildings of a previous era, all the supplies and equipment, generators, fuel, food and drinking water has to be transported to the islands.

The first amateur radio activity on this island group was in July 1990 by a number of German amateurs signing as ZS9A/1 and using also their own callsign with the additional suffix of ZS1. The second activity was in December 1990 when Martti OH2BH, Wayne N7NG, Pertti OH2RF and Chris ZS6BCR were operating as ZS9Z1. The DXAC, after many months of deliberation, accepted Penguin Island as a new DXCC country in May 1991. In December 1991 Chris ZS6BCR and several other operators were active from these islands as ZS0Z. The present activity as ZS0PI is the fourth DXpedition to the islands as far as I know. The activity was from the 24th of July to the 3rd of August. A group of four German operators were active on most of the bands including 80 metres QSL goes to Helga Kohl, Barkhauer Str 85, D-2300 Kiel 14, Germany

Future DX Activity

- Mura, ZX0ECF is active from the Brazilian Antarctic Base at Cape Ferraz QSL to Estacio Antartida Comandant Ferraz, Agencia Correio Satelite, Antartida, 20201/970 Brazil.
- Simon G0GWA is active as 5H3FOE for the next two months. QSL to his home

- CW enthusiasts please note. There is a possibility that Roger G3SXW will be active this year from Tristan Da Cunha. If the project succeeds the activity will be on all nine HF bands, CW only.
- Chris, D2SA is very active on 14198 kHz at around 0600 and has given VK/ZLs the opportunity to work him. QSL to FG6NU.
- Alan 7Z1AB will be active from Saudi Arabia for the next two years. He is employed by the US Embassy. QSL to KN4F.
- There is a rumour that SP6RT might operate from Libya as 5A0A in October or November
- Nauru, C2, may be activated by the Desecheo-Navassa DX group next year, around the 23rd of February to the 2nd of March
- Kim, OZ1ACB is now active in Angola as D2EYE until December.
- Eric, NM5M can be heard as E35M mainly in the CW mode outside his working hours. QSL to home call.

Interesting QSOs and QSL Information

- EX8F — Vlad — 14017 — CW — 0453 — July. QSL to DL6ZFG, Rolf Rahne, PO Box 15, 0-3304, Gommern, Germany.
- HZ1HZ — Ahmed — 14032 — CW — 0419 — July. QSL to N7R0, Dick Moen, 2935 Plymouth Dr, Bellingham, WA 98225, USA
- J2BBM — Bob — 14242 — SSB — 0441 — July QSL to K1SE, William B De Lage, 8597 Burlington Ct Manassas VA 22101 USA
- BT2000BJ — 10105 — CW — 1255 — July. QSL to Rick Niu, Chief Operator, Box 2651 Beijing 100084, Peoples Republic of China.
- YY1JA — Jay — 7027 — CW — 1125 — July QSL to Jay Parke Allen, RR2 Site 15, Camp 117, Whitehorse, Yukon, Canada.
- PA3CXC/ST0 — John — 18162 — CW — July. QSL to John H Fung Loy, Straussein 4, NL-2551, NM S Gravenhage, The Netherlands.
- E22DX — 21297 — SSB — 0447 — July QSL to HS1HSJ, Viroj Supapak, PO Box 7, Bangkok 10220, Thailand.
- ZK19HX — Uwe — 14185 — SSB — 0616 — July. QSL to DJ9HX Uwe Jaeger, Eschenstrasse 16, D 7106, Stein A K, Germany.
- OD5ZZ — Walid — 14195 — SSB — 0516 — July. QSL to Walid Karami, Box 782 — Tripoli — Lebanon.
- VK4BRE — Rex — 14222 — SSB — 0624 — July. QSL to Rex East, P0 Box 418, Thursday Island, Torres Strait, QLD 4875 Australia.

From Here There and Everywhere

- Sid, VK2DID reports that VP8GAV is located at Faraday Base, Argentine Island, off the Antarctic Peninsula at 65° 15' S and 64° 16' W. The QSL manager is David, GM0LVI
- If you are chasing DX on 40 metres listen into Nicola's net on 7070 kHz at around 2000 to 2200 UTC. Kerry, VK4MZ is also around there most of the days.
- VR6BB was active on Pitcairn Island in the beginning of the year. His QSL manager is JF2KOZ. Many VEs are waiting on the card. Here is his address again: Yuji Miura, 7-3, Yanagisaka, Room 101, Main-Hatsu, Tahara, Atsumi, Aichi, 441-34, Japan.
- The Peter I Island DXpedition is progressing slowly. They will sail from Falkland Island on January 23, 1993 in an icebreaker and intend to stay on the island for 16 days.
- ZK19HX was heard during the IOTA Contest from South Cook Islands.
- The traditional "Frontier" meeting of amateurs from Hungary, Austria, Slovakia, the Czech Republic and others from Europe will take place on September 10-12 in the City of Sopron on the Hungarian-Austrian border.
- 409W is operating from Belgrade. QSL to YU1EXY.
- No further news about Romeo in Libya. Wild, unconfirmed rumour says he is in jail in Libya.
- 9K2JC wants his QSLs to the Bureau or c/o Canadian Embassy, Box 25281, Kuwait City, Kuwait.
- Kim, HL93A/P2 was on Jeju island QSL to HL1XP.
- 5Z4BI is leaving Kenya at the end of September.
- As we reported some time ago, as from the 1st of July 1993 the German postal

**Help stamp
out stolen
equipment. Keep
a record of all
your equipment
serial numbers
in a safe place.**

codes (zip code) now contain five digit numbers.

- According to the "DX News Sheet", Minoru JA3MNP has been invited by the monk Apollo SV2ASPIA, together with SV2WT, for one week personal visit to Mount Athos (no amateur activity). Minoru will present Apollo with an IC-750 and RTTY equipment as a gift and might demonstrate the equipment if so desired.
- French postal rates changed on 5th of July, but one IRC or one "green stamp" still covers a 20 gm air mail letter anywhere in the world.
- VR2EK is Dave, operating from Hong Kong on 40 - 10 metres, both SSB and CW. QSL to G3AUW.
- DK0WCY is a beacon on 10.144 kHz. Good for checking European propagation.

- If you missed the last St Paul Island activity, the second operation with the call CY9CW1 concluded around the 18th of August. QSL to PO Box 884, Pointe-Claire/Dorval QC Canada, H9R 4ZB.
- In the first 6 months of the year the ARRL outgoing bureau has mailed 1,183,060 QSL cards.
- The Natal DX Group, a Brazilian Amateur DX Group, is planning a DXpedition to St Peter & Paul Rocks (PY05) in January or February 1994.
- Franco I4LCK, who was on Ibo Island (IOTA AF-061) as C9LCK/P, has operated as 3D2CK/P from Matagi Island (OC-16) from 8th to 12th August and from Yavu Island in the Ringgold Group from the 14th to the 22nd August.

- Mike, N9NS the leader of the Kingman Reef/Palmyra DXpedition (KH5), sent me more details and a photograph (see front cover of this issue) dealing with the days on that reef. Here is part of his letter (see also May and June AR). Kingman Reef is a triangular shaped atoll located 1000 miles south from Honolulu, Hawaii. It measures about 6 miles on one side and it is completely submerged except for an 800 foot long gravel bar near the south-east point. This bar averages 10 to 20 feet in width and rises about six feet above mean sea level. The Palmyra Islands lie about 35 miles to the south-east of Kingman. The transport and logistic difficulties, which were beyond the control of the expeditioners, are well known. Six operators started the activity at 0400 UTC on March 11. A few days later two operators were transported to Palmyra, the other four to Kingman. Last contact from Kingman was made at 2035 UTC

on March the 15th after nearly 24000 QSOs. The Palmyra group made about 9000 contacts in four days. Mike apologises for being late with QSLing. He has, so far, 15000 cards to reply to. There were "maddening" delays in producing the cards but by the time you read this the cards are probably with the printer. He is asking for patience and understanding.

QSL Received

S52FB (2W OP) — 5X1OX (2M K7UP) — 5X1XT (9W WF5T) — T94CR (7W

SM5AQD) — AH1A (5M MHDXA/K1ER) — C9LCK (10 W I4LCK).

Thank You

This column would not have been possible without the input of the following contributors: VK2DID, VK2KFU, VK3DD, VK4DA, VK4CRR, VK4CY, VK4OH, VK4OD, VK5WO, I4LCK, N9NS and the following publications: QRZ DZ, The DX Bulletin, and the DX New Sheet.

Good DX and 73

"PO Box 93 DURAL NSW 2158" ar

Education Notes

Brenda M Edmonds VK3KT

I recently received a letter from a member of the RSGB Training and Education Committee, asking for information about amateur radio training, education and examinations in Australia, and providing information about some of the schemes being developed in the UK. It included a list of over 30 schools with active amateur radio clubs or with staff or students participating in radio type activities.

The RSGB is currently running Project Year, "Youth into Electronics via Amateur Radio" which, while aimed at beginners of all ages, has placed strong emphasis on activities which will attract youngsters into the hobby. The recent establishment of a Novice level licence in the UK has apparently been very successful, with a large number of Novices already active both individually and within clubs or schools. The RSGB Journal, "Radcom", gives good publicity to such activities, and also produces a separate publication, "Do-it-Yourself Radio", specifically for beginners.

The letter also enclosed a copy of a circular from the IARU, Region 1, seeking information on the involvement of schools, teachers and students in amateur radio related activities, and ways in which amateur radio can be used within the normal educational system. This information will be collated with a view to assessing the educational impact of amateur radio within Region 1, and providing reports to participants to allow them to share ideas and projects.

For some years I have been trying to collect this type of information, but with little success. I do know of a few teachers and schools who are very active in the training and operation of amateur radio stations, and from what I have heard some

of them are doing a fantastic job (Maggie, when do we get that report of your big function?). But now that I am no longer directly involved in schools I find it harder to keep my information up-to-date.

Perhaps this would be a good time to try to update what information I do have, and extend it. I would be very pleased to be able to send the RSGB and the IARU a full report of what is happening in this country, and receive their reports in turn. How about all you active teachers, or students, dropping me a short note to say what you are doing, who is leading or helping, the successes you have had, and the ideas you have in mind. If you like to prepare a short "This is how we did it" item, I will be very pleased to include it in these notes to share the ideas and encourage the newcomers. I know there is an enormous amount of talent and enthusiasm out there, and many members would like to read about it. Some may even be stirred to offer further help.

Perhaps, also, this could be a start for a scheme in Region 3 similar to that in Region 1. There is already a small group of enthusiasts working on ways to introduce amateur radio to the developing countries of the Pacific area, but it seems to be moving fairly slowly, and making few reports. There are also moves towards the establishment of a single licence scheme for the countries of the Pacific Rim.

I look forward to receiving a veritable flood of information in the near future. I thank you all in advance for your enthusiastic responses.

Brenda VK3KT

"WIA Federal Education Co-ordinator
PO Box 445 Blackburn VIC 3130" ar

International Amateur Radio Union Monitoring Service (IARUMS)

— Intruder Watch

Gordon Loveday VK4KAL*

The International Amateur Radio Union Monitoring System (IARUMS) is set up to record, report, and encourage the removal of non-amateur stations from amateur band allocations. Stations targeted are usually broadcast or commercial stations from other countries. Priority is not given to local "pirates". Each country appoints a Co-ordinator, who is responsible for collating reports and

forwarding them to the appropriate regulatory authorities (the Spectrum Management Agency in Australia).

Each WIA Division, apart from VK3, has a Divisional Co-ordinator to collect reports from that Division and forward them to the Federal Intruder Watch Co-ordinator. But the main strength of the service is in the individual amateurs who spend time

regularly listening on the bands and identifying types of signals and stations.

More Intruder Watch listeners are always required. Volunteers who contact either their Divisional Co-ordinators or me direct will be supplied with information, log sheets and tapes to assist in identifying modes.

Below is a recently logged list of intruders into the amateur bands:-

Summary of Illegal Intrusions for June 1993

FREQ	DATE	UTC	MODE	COMMENTS	"X"
3588.5	240693	1250	PON	6 kHz wide	
3623.4	0806	1310	non	non amateur tones 6kHz wide	
7002.5	2105	mni	A1A	V Beacon CIS	21
7000.72	2706	1245	J3E	Group,for lang,2way,no c/s	3
7013.5+	2906	1139	R7B	Very broad	8
7022/24	2506	1320	NON	Also F1B,STN SHIFTS	
7039.5	2106	1120	A1A	Beacons,H F S N K R 98BD,CIS	40
7052.2	2408	1250	NON		
7055.5	1106	1100	MDX	PON,F1cw,F7B	
7064.5	2806	1128	F1B		
7070.5	2906	0830	F1B	3 kHz Shift	
7085	050693	1050	A3E	B/c,R.Bangladesh??Home service	
7093	2806	1200	MDX	Bursts,F1B Rev,FSK Tfc	
1012.5	2306	2142	R7B		
10115	2306	2145	A3C	WX FAX daily	30
10125	2006	2250	A3E	Fern voice,c/s VLB 2	
10133	1906	2250	A2A	VHP mcw A13 B[?]	
14061.5	220593	0645 +	MNI	PON,A3C,A1A,F7B.	37
14070.5	2406	0720	A3C	FAX Drum speed 120 + F1B ry's	
14072.3	2706	1220	A3C	FAX " " 120 RPM	
14073.5	2806	0709	F1B		
14075	2506	0830	F1B	Also F3C	
14078	250693	0800	A3C	FAX 120 rpm drum speed	
14093	3006	0445	F1B	RTTY 4kHz shift	
14095	0406	1110	F7B		
14114.5	2106	0415	A2A	2 & 3 LTR groups mcw	25
14142.5	2105	0840	R7B	Sev chan,H 24 str 5kHz wide	8
14170.5	2105	0750	F1B	MNR,UMS group,250 Hz CIS	30
14210	2205	1040	A3E	2 F of 7105 kHz Taiwan ?	6
14338.5	0906	2140	A3C	Daily Wx Fax	30
18090	210693	0843	R7B		
18100.5	1206	0515	—	149 Baud Sync	
18135	0406	1050	A3E	Weak b/c stn music	
18137	1306	0520	F2B	Piccolo	
21113	mni	0550 +	A1A	C/S P7A	10
21324	0806	0522	A1A	C/s VVH	
24894	1206	0638	A1A	Marine radio cw tfc,non amateur	
24965	150693	0847	A3J	Fern voice,synthetic,updating data,eg,GA03,GA05,QL 20&C	

Random Frequencies needing further checking: 21001, 21005, 14125.5-1429 B9W, 4 kHz w from 0545/0940 z; 14156 to 14162.5 at 1055 z 14176.5 F1B, 1050 z, 250 Hz, no ID to date.

All non modes need checking at random times for possible callsigns.

Hint: R7B sounds like a large circular saw and B9W sounds like a distant jet engine.

My thanks this month to VKs 2GS, 4AGL, 4AKX, 4BXC, 4BTW, 4JJS, 5TL, 6RO

*Federal Intruder Watch Co-ordinator, Freepost No 4 Rubyvale QLD 4702 or VK4KAL@VK4UW-1

QSLs from the WIA Collection

Ken Matchett VK3TL*

The Royal Corps of Signals

Success in modern warfare depends considerably upon the standard of communication between one's forces. Before the 19th century, weapons and ammunition were of such a relatively poor standard that bugle and trumpet sufficed as short range control signals. As musketry and cannon increased their range, communication over a much greater distance became necessary since the fall of shot could no longer be observed from the gun lines. After an extensive period during which heliographs and flags were used, Morse telegraphy came to revolutionise the art of communication. The perfection of this mode of communication, together with the development of signal telegraphy, corresponded with the growth of amateur radio activity and wireless experimentation. The successes of the Allied Forces during World War 2 were due, in no small amount, to the pool of radio amateurs available for service in signal units of the Navy, Army and Air Force. It is not surprising, then, that signallers from many countries have formed numerous radio clubs brought together with a shared love of amateur radio.

G4RS

The Royal Corps of Signals is one of the world's oldest communication organisations. It was formed in the year 1920 taking over the task of armed forces communications from the Royal Engineers. A special issue QSL, GB70SIG celebrated on 28th June 1990, the 70th anniversary of the formation of the Royal Corps of Signals. Operation was from the Signals Training Centre, Scarborough. Another special issue QSL was GB0RSR which celebrated the Royal Signals Reunion at Catterick. The QSL shown, G4RS, with its appropriate suffix, is the HQ station of the Royal Signals Amateur Radio Society (RSARS) at Catterick Garrison in North Yorkshire. It will be seen that the logo of the Corps of Signals displays the Greek God, Hermes (Roman God, Mercury), the messenger of the Gods. He wears on his head the petes or felt cap worn by travellers and holds the caduceus or herald's staff in his left hand. He stands above the world globe about which is a scroll with the motto "Certa Cito" (Sure Swift). Above his head is the Royal crown.

Many readers will be familiar with the QSLs of RSARS members who display this logo and, like the members of the Royal Navy Amateur Radio Society, (see AR Feb, April, June 1993) proudly indicate their membership number on the card. Such QSLs emanate from all corners of the globe. The call 9M2CF is that of the Armed Forces Signal Regiment in Malaysia (No 210), station VS6AA on

MEMBER STATION
HQ
ROYAL SIGNALS
AMATEUR RADIO SOCIETY



School of Signals, Blandford Camp,
Blandford Forum, Dorset DT11 8RH
ENGLAND

Hong Kong Island (No 282), Station VK3NO (No 1614), ZL1AXM (No 530), and NT2R in New York (No 883) to name just a few.

VK2RAS/5

The development of a signal Corps in Australia follows closely that of its British counterpart. As early as 1885 a "Signalling Corps" was formed in South Australia and even before that date (in 1869) there had been established what was known as the "Torpedo and Signal Corps" in Victoria and NSW. In fact it can be said that Australia has the distinction of having the first regularly-formed signal unit in the British Empire. Like the British Corps of Signals, our own signals corps was, in its infancy, attached to the Engineers. However, it became a separate entity in 1920 known as the Corps of Signals, and five years later as the Australian Corps of Signals. (It wasn't until 1948 that King George VI granted the title "Royal Australian Corps of Signals"). At the same time this body became affiliated with the Royal Corps of Signals of the British Army. From modest beginnings, the Corps grew in numbers until during World War 2 no fewer than 24,000 men and women had joined its ranks. The logo of the Royal Australian Corps of Signals (RASICGS) is the same as that of the Royal Corps of Signals with the exception that beneath the globe upon which Hermes stands is a boomerang bearing the word "Australia".

The VKZL Chapter of the RSARS was formed around 1980 by Rob VK1ARL and Les VK2NLE. The Chapter used the call VK2DRS, contacts being made with RSARS members in Great Britain, but in 1982 the more distinctive call-sign

VK2RAS/5

ROYAL SIGNALS AMATEUR RADIO SOCIETY
HQ STATION VK-ZL CHAPTER. RSARS No. F21
Postal Address: 12 PARK AVENUE, ROSSLYN PARK,
SOUTH AUSTRALIA 5072



Radio	Date	GMT	MHz	Mode	RPT
E3m PB RAFARS - 729	23-10-99	0810	14065	2-CW	439

STATION LOCATED *Adelaide*
The Bay 559 from Redhill

OP Lindsay VK5GZ

VK2RAS was granted by the authorities. This call has been used extensively operating portable in the various Australian States, particularly South Australia. The station manager of VK2RAS/5 is Lindsay VK5GZ to whom the author is grateful for supplying both QSL cards and information about the VK/ZL chapter. The club secretary Ken VK5AL will also assist in membership enquiries. Regular skeds are conducted on 3.615 MHz at 1030 z on Wednesday evenings whilst a world-wide SSB net is conducted on 14.153 MHz on Saturdays at 0600 z. The CW net working frequency is 14.065 MHz. There have been several stations on the air associated with signals before the formation of the VK/ZL Chapter of the RSARS. The commemorative station AX3SIG operated during 1975 from the Signals Depot, Watsonia Barracks. This call celebrated the Royal Australian Corps of Signals 1925-1975 Jubilee. Station VK3ASR of the Royal Australian Corps of Signals operated from just after World War 2 until the 1980s. The Royal Australian Signals Association of NSW operated VK2AIF during the 1970s, and the call VK7SR was the call issued to the Army Signals Radio Club in Tasmania in the 1950s.

Of course the Army is not the only Force with which we associate signalling. Even before World War 2 there were many amateurs who were proud members of the Royal Australian Air Force Wireless Reserve. Several of these made mention of this fact upon their QSL cards. The RAAF Wireless Reserve, which played such an important role in providing a pool of well-trained wireless operators for the RAAF during the war, was the brain child of Howard Kingsley Love, one time President of the WIA and founder of the well known firm, Kingsley Radio. At that time, he was a Flt Lt in the Citizens Air Force based at Laverton. It is interesting to note that radio control was effected by the WIA's own transmitter, VK3WI, then located at the Essendon Aerodrome.

P1IVKL

The interest shown in signalling is not confined to those radio operators of Great Britain and Australia. The QSL shown, P1IVKL is a specially assigned call of the Royal Netherlands Army Signal Corps at Utrecht. (The prefix P1 rather than the usual PA is assigned mainly to radio clubs, schools and maritime mobile operations) Quite a few other countries have special prefixes or call-sign suffixes. The Indonesian Station YE3C was a special station of the Indonesian Army Signals Corps transmitting from Surabaya, East Java celebrating its 40th anniversary (in 1985). The HB4 prefix has



ELECTRONIC REPAIRMANSCHOOL
UTRECHT THE NETHERLANDS

only been used a few times. The Swiss Army Signal corps used the call HB4FB during its National Field Day in 1961. The Norwegian call sign LA2J is the club station of Army signals. One of the most interesting QSLs in the WIA collection is J2AHI in Japan. This call, issued before the allocation of the JA prefixes, belonged to Major Lloyd Colvin of the US Army of Occupation Signal Corps in 1948 long before he became world famous as a DXpeditioner. Yet another special call to be found is that of SL5AX, the Signal Training Centre of the Royal Swedish Navy. (The prefixes SL and SK are special calls issued to mainly military installations permitted to operate in the amateur bands).

Apart from special calls, there have been numerous calls on the air from all over the world which have been associated with signal training organisations and clubs, eg: AP5HQ the Command Training Centre in Pakistan, VU2SS School of Signals at Mhow, India, E15C Signals Radio Club in county Kildare, Ireland, VS5CS Signals Club Brunei, HL9US Signals Section of the 8th US Army in Seoul, ZB2B the Rock Wireless Station on Gibraltar, ZB1AC Army Signals Malta Force 9M2XX the Gurkha Signal Regt in West Malaysia,

to name just a few. Special mention should be made of the US Army Signal Corps. DX operators will be aware of the numerous signal stations both on the US mainland and in US possessions in the Pacific. What might not be so well known is the close liaison on an official basis between the US Signal Corps and the amateur administrative body, the ARRL.

The public service value of radio amateurs during the First World War was realised to such an extent that the US War Department itself, soon after the Armistice, initiated plans for the establishment of an Army Amateur Radio Service (AARS). Under this plan the ARRL undertook to assist in organising and promoting the AARS as a reservoir of trained radio operators. The plan took effect on 1st November 1925 resulting in a valuable nucleus of signal officers and men when America entered the War in 1941. (*It continued post-war with all services as the Military Affiliated Radio Service [MARS] Ed.*)

Author's Note

The WIA QSL collection is still in need of QSLs. Could you make a donation? Of special value are rare DX, special prefixes and commemorative QSLs. Please contact the author of this series of articles, who is also the Honorary Curator.

Thanks

The WIA would like to thank the following for their kind donation of QSLs to the WIA collection - (supplementary list)

- Alan VK3CD Chas VK3QY Fred VK4RF
- Robin VK6LK Lindsay VK5GZ Jim VK7WR
- Lindsay VK3LFA John G3BDO Jim VK1FF
- Norm VK4KO (courtesy Archie VK3LAB)

Also to the family and friends of the following "silent keys": (supplementary list)

- Charlie Davey VK3WT (courtesy of Tony VK3ZMP)
- Harold Wright VK2AWH/VK0WH (courtesy of Bill VK2WJC)

Joe Ackerman VK4AIX (courtesy of Norman VK4NN)

* Sunrise Hill Road Montrose VIC 3765
Tel: 03 728 5350

Silent Keys

Due to increasing space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

F H	ARMANASCO	L60370
L W (Leslie)	COLLINS	VK2PBY
I G (Irene)	WILSON	VK5CKP
J E (John)	LAMPREY	VK5JL

James Creswell (Cress)

Clarks VK4AK

We report with regret the passing of a fine teacher musician, dedicated ham and colleague-in-arms at his home in Bracken Ridge, Brisbane, on 25th May 1993, at the age of 74.

After his discharge from the RAAF at the end of the war Cress was licensed as VK2AYB at Wentworthville, NSW where he spent many happy years with his wife, Mary, raising their family.

For a time he was President of the Wentworthville RSL and was also President of the Bowling Club.

Cress joined the RAAF in 1941 and trained as a wireless maintenance mechanic to become an original member of No. 30 Beaufort Squadron formed in July 1942. He served at Port Moresby, Milne Bay, Goodenough Island and the Trobriands, returning to Australia in January 1944 to take up experimental work at RAAF HQ.

Before leaving NSW, Cress took up the call VK2CC. When he and Mary moved to Brisbane in 1988 the VK2CC call went to the Royal Naval Amateur Radio Society and Cress became VK4AK.

Because of his association with Radar personnel during the war, Cress was accepted as an associate member of the RAAF Radar Net.

Cress has always been very close to his family, particularly the grandchildren. Most of the immediate family now live in Brisbane.

As the minister of the Bracken Ridge Uniting Church said "He was just the sort of bloke we can't afford to lose".

Bill VK4UB and John VK4MX
for the Radar Group

Ian Yule ZL1AEM

Ian Yule passed away at his home on 4th August 1993. Ian was a keen yachting enthusiast and would be well known to amateurs throughout Australia and New Zealand.

Ian, who returned to New Zealand some years ago, was a founding member of the Western and Northern Suburbs Amateur Radio Club which was established in the late 1970s. Ian was a former president of the Club and, with others, was untiring in his efforts over a number of years to establish and maintain a club in Melbourne's northern suburbs. Ian's callsign at that time was VK3ANZ.

David Hunt, Spectrum Management Agency

ar

it in terms of a bunch of dits with a dah towards the end.

The sound of dits is written without the t (except for the last one) for a very good reason — they have to be said quickly, and you can't manage that if you say "dit — dit — dah — dit...di-di-dah-dit". You should now be ready to learn another secret technique, which is speed.

You should learn the characters at speed high enough that they sound like Morse characters, not individual dits and dahs. While you are learning the code, the character speed should be eight to ten words a minute with extra space in between the characters to slow the message speed down to something you can handle. This is called proportional spacing. When I was introduced to the code for the first time I heard the letter S sent at a speed of fifty words a minute. Just once, all by itself. Most people can recognise it without difficulty. This proves that there is no problem in hearing code characters and remembering them, the problem is in converting them into letters.

You should by now be ready to start learning the code. You've had all the tools you need since the day you were born. It is simply a matter of applying them (and yourself) to the task at hand.

Ideally you should listen to pure audio tones, such as those sent over the air by a good practice oscillator driven by a competent operator. You certainly can learn the code characters by saying them to yourself all day long, without benefit of an instructor or tapes, but there are easier

Pounding Brass

Stephen P Smith VK2SPS*

The intended two part series on Samuel F B Morse will appear in later issues. This month we will look at learning the Morse code.

Over the years there have been various teaching methods and practices for people interested in learning Morse code. Some of these methods were good, others not so good. I recall the method I was taught many years ago (outlined here) and the E I S H 5 method from the Marconi school of Wireless (will appear in a later issue).

Before learning the code I would like to raise this important point — to complete a Morse code course successfully will depend on how you apply yourself. For example, set yourself an objective, say 15 to 30 minutes per night, and stick to it. If you follow this rule you will become the master not the slave to Morse code. Remember the old saying "practice makes perfect". There are no magic recipes which will qualify you as a brassbound overnight. There are a number of tips and techniques which can make the job easier, but ultimately it is up to you.

When Samuel Morse invented his code, he had no idea anyone would ever be trying to copy dits and dahs from wireless transmission. In the first place, the code was devised for use on the land-line

telegraph. In the second place, the intention was for the signals to be transcribed onto a paper tape by a swinging pen and then read by sight. Once operators learned the code they quickly found that they could recognise incoming characters by the clicks the pen made, and it wasn't long before they realised that it was actually easier, so the pen gave way to the sounder.

The Morse code consists of patterns of short sounds and long sounds, interspersed with spaces. Forget you ever heard of dots and dashes (at least until you have learned the Morse code) and think of the short sounds as "dits" and the long sounds as "dahs". This gives you a useful way to represent the sound of the code any time you want — your own voice. Here, already, is your first secret technique to help make the job easier — now that you know how to say a Morse code letter by using dits and dahs! What you are really interested in is the sound of the letter.

For example, when you hear the sound "di-di-dit" you should recognise the sound as representing the letter S. You should not count the dits. Take a more difficult one now — "di-di-dah-dit". Say it over and over to yourself until you recognise the sound of an F without having to think of

ways. If you can get someone to send to you, have them send at a character speed of 8 — 10 wpm, spaced out so they send a character every three or four seconds. This gives you plenty of time to recognise the character, but not enough time to mentally go through the whole alphabet until you locate it.

You need a program for learning the characters, so I would suggest the following groups, which give you easy letters mixed with hard ones so you are not tripped up by Qs, Js, Xs and Zs which you would probably have put off till last.

AXSET HBDIJ OPQRM ZCGNV
UYLKWF 12345 67890

Learn each group thoroughly on its own then add it to the letters already learned,

then make up words using the letters learned. Leave the numbers until you have mastered the letters, and you will find them a lot easier. Do not go on to the next group until you have mastered all of the letters learned so far.

You can get a lot of practice in by writing the group you are studying on a bit of paper (writing dots and dashes of course, not dots and dashes) and glancing at it while on the bus, or at work or whenever you have two minutes to yourself.

Once you have learned the first group, you can start listening to practice tapes and the slow Morse broadcasts. Just worry about picking out the letters you recognise and form a good habit now. If you miss a letter forget it and concentrate

on the next one. If you strain too hard to remember a letter, you will miss the next several letters and that's a circumstance which could cost you a pass in the exam.

Once you have learned the code, it's just a matter of getting your speed up to the required level (or level you desire, which should be higher than the required level). The only way to get your speed up is to practice, whether it's listening to tapes or live code on air, having a friend send to you, or calling out licence plates from passing cars.

Next month I'll give you some more ideas for practice and getting you up as fast as you want to go. Till then, 73.

"PO Box 361 Mona Vale NSW 2103

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Repeater Link

with Will McGhie VK6UU*

FM828

Reference to a manual put together by Alan (Mac) Mc Kinnon VK5AM on conversion of the Philips FM 828 to Amateur repeater service, has resulted in a flood of requests from Amateurs the Port Augusta Amateur Radio Club. As the manual was only put together as a record of the conversion process, copies are not available off the shelf, and there is a small cost involved to reproduce the information. Alan VK5BWG is prepared to supply the requests for the manual if he is supplied with an A4 size envelope, and six 45 cent stamps to cover postage and copying costs. For those who have requested a copy please send the above, and in time Alan will endeavour to send the information to you. Alan also mentioned that Mac VK5AM passed away in 1992 and will be sadly missed not only for his technical know-how but his friendly and cheerful attitude to all those who knew him.

VK3DRB Stateside

A packet bulletin I read a couple of months ago was, to me anyway, so interesting that it is worth reproducing in Repeater Link. It chronicles David VK3DRB's travels through parts of America. The article is interesting reading from a general ham point of view and also from his experiences with repeaters that do just a little bit more. For example a repeater, that if you tune out on, tells the listeners so, then cocks a gun and fires 3 times. A bit of fun in the sometimes serious business of amateur radio. I contacted David via Packet Radio and he gave me permission to reproduce his article

Hamming in Texas

— by David Byrne, W5/VK3DRB

I have just returned from a seven month IBM assignment in Austin, Texas. It was a great experience for myself as well as my wife and three children. On weekends and vacation, we managed to travel as far south as Mexico and north to Oklahoma. I bought a little FT-23 from VK2CXC just before I left. It was without question the most useful thing we brought with us, next to the passports and visas!

Not only was it a medium in which to meet many of the local Austin hams, but it was also an excellent road map and telephone. We visited many cities, including Houston (went to a BIG hamfest there — silver plated PL259s with teflon dielectric for \$US 1 each! 2 kW baluns for \$US 10!), Dallas, Fort Worth, Arlington, San Antonio, Waco (you heard of Waco, eh?), Fredericksburg, Johnson City, San Marcos and a number of others. I never used a road map outside Austin. Whenever a Texan heard a VK asking for assistance on the 2 m, it was GUARANTEED someone would come back and assist straight away. In fact, a ham in Dallas gave us a one day tour of Dallas and Fort Worth by radio. It was indeed a joy to meet him at the end of the day at a hamburger restaurant.

Austin is a unique city in the world and has a population of only 400,000 people. It is arguably the folk music capital of the world. It is also very high tech, with the huge plants of IBM, Motorola, Texas Instruments, MCC, Del Computers, Abbott Labs and others. It boasts three big universities and has the highest average education standard for any city in the USA. The people are most friendly, in stark contrast to New York and LA. Also, there are many excellent Tex-Mex restaurants

there. Ever tried eating a raw jalapeno whilst having a QSO on 2 m? The standard of living is high, and my home QTH 1974 HQ rust bucket would stick out like a sore toe amongst the Corvettes and RX-7s. Mind you, even my HQ would like to the \$US 1.02 per gallon of gasoline. (Most all Texas oil is imported too. So much for our World Parity Pricing of 72.5 cents per litre in Wangaratta.) One downer about Austin, however, are their 4 way stop signs — don't hold a mike as you approach one of those!

In Austin, there are many repeaters, some of which have phone patch facilities. I bought a \$15 Tandy touch tone encoder for the FT-23 to activate all the repeater facilities. I could telephone my wife from Austin or surrounding towns from the car using the 2 m rig (local calls are free in Austin.) I could even ask my wife what was she wanted me to buy once I reached the store and forgot as usual. Mind you, phone patch there is respected and not abused. The maximum length of a call was about 5 minutes. Many of the repeaters are privately funded. An IBMer W5EBJ owns 4 of the best repeaters I have ever heard. On his 147.180 repeater, you can enter a code and the repeater advises you in a "digitised" voice your FM deviation, transmit frequency accuracy and signal strength into the repeater. If the PTT button is inadvertently pressed momentarily, the repeater responds with a "Good afternoon, this is W5EBJ's repeater. The time is..." and a female voice says the time and date. There is another repeater on 145.210. Not a bad repeater, but what makes it unique is that it has a 10 metre FM link. For this reason, I will be purchasing an FM board for my FT-747 so I can contact some 2 m friends in Austin when conditions permit. This link is switched in for about 12 hours a day, and a 70 cm link is switched in for the other 12 hours.

My favourite repeater was W5FQR's 146.880 repeater. The repeater was easily accessible from my apartment and had a

good phone patch. One repeater in Austin has a unique feature where, if you time-out, the repeater says you have timed-out, cocks a gun, and fires three bullets. My family exploded into laughter when I timed out that repeater.

Most Texas repeaters are on towers, some as high as 1500 feet. I saw a few of these towers and I started dreaming about owning a 1500 foot tower of my own (keep on dreamin', buster).

One of the big interests in the Austin Amateur Radio Club is fast scan TV. Many of the hams engage in emergency communications drills and have a good relationship with the local police force. One of the 50 cable television stations we had was the local weather channel. During violent storms, hams would radio in a net and give accurate details on how the storm was progressing at their location. This information is fed back to the TV station. Tuning in around 162.400 MHz, I could hear the audio for these local weather forecasts anywhere in the USA. In Texas, they are dead accurate with their forecasts, too!

We got a buzz when we visited Gary N5PHT with whom I had a weekly slot on 20 m for 4 months before visiting Texas. We visited each other's families many times whilst we were there. Gary is a great guy, and can often be found on 14.200 MHz.

Dave N5RNE informed me that a personalised car registration number plate for Amateur Radio Operators costs \$1 per year! These number plates are really nice, with the call sign in big blue letters with a white background. In smaller letters are the words "Texas Radio Operator". The reasoning behind this is that a ham can easily be identified in the event of emergency, and also as recognition by the Texas state authorities of the amateur radio hobby. In the state of Victoria it costs several hundred dollars (\$295 Ed) for us to have such a number plate. An example of the different mentalities. However, I will be lobbying for "complimentary" amateur radio licence plates to be introduced in Victoria to licensed hams only. Any comments, please send to VK3DRB@VK3EEE on packet radio.

All in all it was a very successful trip. Austin and its people were fabulous and many friendships will continue for years to come. I met many hams whilst there, and our 7 am weekly breakfast meeting at the Arboretum will be missed. I thoroughly recommend anyone travelling to the US to get a reciprocal licence from the FCC, submitting the application 3 months in advance. Gary N5PHT helped me get mine, and it was all well worth the effort.

*21 Watauga Cr Lemurie 6076 VK6UU@VK6BBS

WICEN

Report on WICEN/INTES exercise

Introduction

WICEN and the NT Emergency Service held a joint exercise on Saturday 1st May 1993 at a location 100 km along the Arnhem Highway from Darwin. The scope of this exercise was limited to providing rear link communications from the Forward Operations Centre (FOC) back to Darwin, a distance of approx 50 km as the crow flies.

Packet radio has, in the past, been used by only a few amateurs in Darwin. With the appearance of cheaper TNCs on the market and the gradual acceptance of data communications, more have taken up this aspect of the hobby. All experience to date has been from established stations at home QTHs. In an attempt to build a base of portable packet experience, it was decided to use it as a secondary method of passing messages after HF.

The Geography

Darwin and immediate surrounding areas suffer from a lack of many things, one of which is mountains, or even hills resembling mountains, which are not conducive to VHF communications. The highest points in Darwin are water towers with an occasional high-rise in the CBD. The challenge was to find a suitable hill with an access road and obtain permission to place a digipeater here.

The location of the exercise was a police youth camp situated near Mt Bundy on the Arnhem Highway east of Darwin on the way to Kakadu. The country is generally flat with light to medium scrub and tree height to 10 metres.

Equipment

As can be imagined, the equipment used came straight from the shack and was not designed to be used in an unfriendly environment. The base radio consisted of an MFJ 1278 and 35 watts.

A digipeater on the Noonamah Tower consisted of an FM-828 and MFJ-1272 TNC. Antenna height was 25 metres. Another portable digipeater was a PK-232 and Yaesu Tx with a beam antenna.

The FOC was in a campervan using a laptop and Baycom modem to a handheld on a Slim Jim antenna.

Conduct

Once in position we established comms on HF (7 and 10 MHz). Propagation was excellent and comms were loud and clear. While this was occurring, a mobile team

was setting up the digipeater link on Mt Bundy. This involved a 4-wheel drive up a fairly steep road for a couple of kms.

This circuit consisted of:

FOC

Digipeat from Mt Bundy (2 km away), to Digipeater on Noonamah Tower (80 km), to Darwin (50 km).

The operation of the HF net presented no problems, the traffic being low density. Working off a car battery initially produced a bit of FM because of the length of DC lead required. Cutting back the power fixed this with no effect on the quality of comms.

The packet link had a few teething problems.

The digipeater equipment belonged to someone else thereby introducing unfamiliarity. When first installed it worked and packets were passed to Darwin but a faulty mic lead forced field repairs and when re-assembled, the squelch setting was set too fine and kept opening. This was not recognised as all the other TNCs ran open squelch. The TNC thought the net was occupied and refused to pass packets.

Thinking the TNC (PK-232) was faulty, the vehicle was sent back again and a station operated from the vehicle. This was successful and messages passed through the digipeaters to Darwin. Much (unjustified) cursing of PK-232s occurred. An engineering channel is necessary so as to avoid technical traffic going over the operational net. The packet frequency was used in this instance but a UHF channel would have been better.

The format for packet messages was:

Msg Nr 01/01	The OUT msg number
R	Precedence
0109001K MAY 93	Date/Time group
OPS 21	Org No
FM	
TO	
BT	
Text	
BT	
EOM	End of message
K or AR	

This format is similar to that proposed for RTTY many years ago and, as anticipated, proved to be a quick and simple format.

The Emergency Service was conducting navigation practice but, due to their handhelds becoming unserviceable, the exercise was terminated at 1300 hrs and so the expected amount of message handling did not occur.

Problems Identified

- AC power was taken from the NTES generator. During the day it was noted that our AC adaptors were running excessively hot. Upon checking the AC volts, it was discovered that the gen set was producing 300 VAC. We started and switched over to our own gen set.
- Unfamiliarity with equipment
- Lack of experience with packet.
- Lack of dedicated portable digipeaters.
- Lack of practice.

Debrief

A short debrief was held. The following points were noted

- If using equipment other than one's own, or if supplying your equipment, an instruction sheet should be included to describe the basic operation and fault-finding of the equipment.
- The packet format should be adopted as standard.
- Practice beforehand is vital. (A re-discovery of the wheel)
- Redundancy is desirable.
- More practice is needed using packet.
- Standardisation of equipment would be nice but, under most circumstances, will never be achieved.
- Reliability of equipment will always be a problem except through constant practice.

Conclusion

Many of the problems encountered may have been encountered by others long ago. This was the first attempt in the NT to establish and maintain communications by VHF packet and get away from the comfort and established situations of the home shack.

The use of packet where applicable would increase the throughput of a circuit with the added advantages of accuracy over voice. The participants in the exercise showed great enthusiasm and initiative when working under trying conditions.

The NTES intends conducting another exercise this year. Hopefully the scenario will test us to greater limits

Trevor Connell VK8CO, Deputy Director, South Australia/Northern Territory

News from WICEN (NSW)

Now that the busy July/August period is over, WICEN (NSW) personnel can look forward to an easier time. The next exercise is the Como-Jannali Fun Run organised by Kevin VK2CKD for this month, but at the time of writing the actual date is not known. There is the Worrige Horse Trial on the 19th September, and the contact is Dave VK2BDJ. Also, don't forget that the last day for renewals is 30th September — after that you will be unfinancial!

October gets busier. The next Coordinators' Conference will be held at Lismore on the 2nd October, and "mine host" is Greg VK2DIL. All coordinators should have been notified of this by now and, as it is in the school holidays, early bookings for accommodations are advised. Also on that long weekend, the 2nd-4th October, is the "Hobbyfest 93" exhibition, and this year WICEN (NSW) will have a joint display with the NSW Division of the WIA. Alan VK2YY (who arranged an eye-catching display at the July "Rescue 93 Expo") is organising this event. Personnel who are not taking part in JOTA on the weekend of 16-17th October may be interested in the Jenolan Cave Rescue exercise (limited to Cave Rescue Squad members) or the Red Cross Mini Marathon, which is a joint VK2/VK3 exercise organised by Jamie VK3KPU. Finally, the last major event for

October is the annual Hawkesbury Canoe Classic, a paddle by moonlight, and Kevin VK2CKD is again the event commander.

The most important event in November (indeed, the only one) is the Big NSW/Vic Bike Ride, starting on 27th November and ending on 12th December. This is a large-scale exercise, and Simon VK2CSC requires as many people as possible, even if they can only spare a day or so. Further information on this event can be obtained from your coordinator, and will also appear next month.

The address of WICEN (NSW) Inc. is PO Box 123, St Leonards 2065. WICEN (NSW) conducts nets at various times; the only one we know about is the Sydney VHF Net every Thursday night at 2130 local time on repeater 7150 in Chatswood.

David Horstel VK2KFU Publicity Officer WICEN (NSW) Inc.

BF

SEANET To Come of Age in Bangladesh

Thomas E. King VK2ATJ*

The 21st annual convention of the Southeast Asia Network (SEANET) will be held from November 19-21, 1993 in Dhaka, Bangladesh.

This is the first time the populous South Asian nation has hosted the prestigious amateur radio conference, a popular forum for amateurs from throughout Australasia.

SEANET '93 organisers, the Bangladesh Amateur Radio League (BARL) anticipates that more than 100 radio amateurs from a dozen countries, including Australia, will register to attend the three day event. As well, some 30 Bangladeshi amateurs, SWLs, enthusiasts and officials are expected.

One of the highlights of the conference will be a special exhibition of electronic, amateur and professional communications equipment — of local and foreign origin — set up in the official conference hotel, the Pan Pacific Sonargaon.

A special event amateur station operating on HF and VHF bands may also be authorised in Dhaka's leading hotel.

Amateur radio activities in the former East Pakistan were suspended at the outset of the Indo-Pakistan War in 1965. The BARL was set up in mid 1979 to promote the numerous benefits of amateur radio and lobby government agencies to permit the wireless hobby activity in the independent nation of Bangladesh. Amateur radio was legalised on August 28, 1991.

A number of SEANET '93 events have already been organised including a gala

welcome dinner at the Hotel Sonargaon on Friday, November 15 and a buffet lunch/river cruise and an official dinner/cultural show set for the following day.

A plenary session featuring a series of presentations on issues facing IARU Region III amateurs will be the focus of activities on Sunday, November 21.

The registration fee for foreign participants is \$US100 (about \$A146). This includes all meals and activities in the conference program plus special souvenirs.

BARL has negotiated with the Hotel Sonargaon to obtain a special daily room and breakfast rate of \$US115 (about \$A168).

In addition, Biman Bangladesh Airlines, the official SEANET '93 air carrier, has agreed to provide a 25 per cent discount to convention delegates. As the airline does not yet serve Australia, delegates from Australia will need to connect with onward Dhaka-bound Biman flights in Singapore.

Further details are available from BARL, GPO Box 3512 Dhaka 1000, Bangladesh, tel (8802) 811 097/98 Attn: Saif Shahid, President BARL or FAX (8802) 891177 Attn. BARL.

Amateurs can also check into SEANET which meets daily at 1200 z on 14.320 MHz not only to learn about the activities of the net and the upcoming conference but to follow the progress of amateur radio developments in this little known Asian nation.

*PO Box 140 Kensington NSW 2333

Over to You — Member's Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Reading the Mail

In the July "Over to You" a letter from Bob Slutskin VK3SK reminds me of my own experience in "reading the mail".

I was with PMG (preceding Australia Post and Telecom) for 45 years before retiring in 1981 and, of course, could read sounder Morse.

I was a WT Op RAAF during WW II and was in a rehab hospital in Jervis Bay NSW after the war when I went into the local Post Office for some stamps. When asked by the counter officer for my requirements I said "Yes, I will have the telegram that just came through for me".

I had heard the sounder going at the back of the office and read the telegram before I had even received it. Even with a break of six years I could still read sounder Morse at about 25 wpm.

(P.S. I expect to be in the Remembrance Day Contest again this year — CW of course!)

Ed Dyring VK2ED
PO Box 3
Gosford NSW 2250

Congratulations

I am writing to tell you how much I enjoy reading "Amateur Radio" each month, and to congratulate you on the general excellence of the magazine.

In "Amateur Radio" we still have really good "home brew" articles covering a wide section of the radio field. These articles seem to have virtually disappeared from most technical magazines — at least as far as amateur radio is concerned.

My thanks to you, your staff and the contributors.

Harvey Utber VK3AHU
PO Box 40
Violet Town VIC 3669

Thanks for Assistance

Stephen Pall VK2PS
Special Projects Officer
WIA NSW Division
Dear Stephen,

I would like to thank the Wireless Institute of Australia for the wonderful assistance provided in relation to the successful Australian Geographic Transcontinental Balloon Attempt.

The amateur radio display was most impressive and the team of volunteers who were on standby waiting for the departure of the flight, then on round-the-

clock duty whilst the balloon was in flight, was greatly appreciated.

Could you please pass on to the large team of volunteers my appreciation for their incredible effort.

It was a wonderful support to both John and myself to know that we had several back-up communication systems in place should anything fail.

Stephen, I thank you for the large part you played as Operational Manager and Scheduler of Operators.

Thanks again, you were a great team.

Dick Smith VK2DIK
Australian Geographic

JA Visit to VK

Last August (92) a letter was published from JH5OWN who was planning a working holiday in VK. He stated how he would like to visit other amateur radio stations in VK-land. As a follow up, I have received a letter which I would like to share with other VK operators, and I quote:

How are you, Mr Penfold? My name is Yoshiaki Goto (JH5OWN). I have been visiting this country since 1st August 1992 and was operating from VK as VK9NY, VK9NY/H, 2, 3, 4, 5, 6, 7 and 8. Every time I announced "QSL via my home call JH5OWN". But I think some QSL cards go to VK QSL Bureau. I am not a WIA member. Would you send QSLs for me if you get QSLs.

I was travelling this country and met lots of VK Radio Operators. I love Australia. Because this country has beautiful nature, and Australian Radio Amateur has good skill and very friendly.

I really enjoyed staying in VK with radio. HI HI. I appreciate all of VK operators' kindness.

Best Wishes 73
Yoshiaki Goto

I thank Yoshi for his letter and the SASEs that he enclosed for his QSL cards.

Neil Penfold
VK9/H QSL Bureau Manager
2 Moss Court Kingsley 6026

New HF CB Band?

Take a look on 7 MHz any night of the week. At 5 kHz spacing, starting at 7.000 MHz and running right up over 7.100 MHz, you will hear the new HF CB band in full swing. The accepted calling method for these non-amateur invaders is a cheerful whistle. It is mostly USB SSB. The language spoken is thought to be

Indonesian. So, we have an "organised" intrusion on a grand scale into one of our most precious night-time DX bands. The interesting thing is that if you take and use a frequency (say 7.006 MHz CW), the commotion dies down on that channel. I presume the poor things have to move to 7.000, or 7.010 or 7.075... to get away from the irritating dits and dahs.

Are we going to let these intruders take our band? Shall we simply move over and accommodate them? Or are we going to put up a fight? I have been operating at the low end of 7 MHz almost nightly, and I'm ashamed to say just a handful of regulars and myself generally have that part of the band all to ourselves (apart from the jolly band of CBers). The apathy on the part of Australian operators is appalling. Too comfortable sitting in front of the TV perhaps? If that is so, then maybe we deserve to lose this band. Others may follow — 10.1 MHz already has similar problems. Will the hallowed 14 MHz band be next? Use it or lose it!

Drew Diamond VK3XU
"Nar Mein" Gatters Road
Wonga Park VIC 3115

Spectrum Value

Referring to the July editorial. Many businesses are not happy to have radio spectrum management handed over to market forces and commercial interests. Some see it as an act of faith; acts of faith are not components of modern business management.

Non commercial spectrum reserves, like all nature reserves, are not only for recreation, or hobby use or for dilettante amusement. The real purpose is for community welfare, to provide reserves dedicated to the special needs of research, education and recreation, also to serve as representative samples of the environment against which changes can be compared, measured, and used as guides to future use. Those long established principles are admitted by all member governments of the ITU, they are not unique to New Zealand, and not a recent innovation for which an impertinent politician can claim credit.

The editorial in the July RSGB journal has more accurate information about the attitude of governments to the Amateur Service and the responsibilities of Radio Amateurs. It is not sufficient just to occupy the amateur bands, use must be a benefit to industry and the community at large; when it is not, those bands will be sold to the highest bidder.

Lindsay Lawless VK3ANJ
Box 760
Lakes Entrance Vic 3909

VHF/UHF — An Expanding World

Eric Jamieson VK5LP*

All times are UTC

Countries first worked from Australia on 50 MHz

This is the present state of the list, comprising 172 countries.

1 = Are there any earlier claims for these countries?

2 = Has anyone worked Thailand (HS1WR) other than VK9XT on 15/03/80?

3 = Did anyone work Okinawa as KR6 other than VK9XK, before 14/05/72?

Most operators have forwarded me their list of modes and times and I expect

that the remainder will do so before the next and final list, which I hope can appear early next year and will include times. Where a mode is missing in the list, in most cases the time also is requested. I am not rushing the final list as I want to present it in its most accurate form. When I am happy with the list it will be released for general publication.

Station	Date	Country	Claimed by	Mode	Station	Date	Country	Claimed by	Mode
3D2SM	20/05/90	Conway Reef	VK4FX (VK4FP)	SSB	G03AHV	28/02/90	Isle of Man	VK6HK	CW
3D2JT	03/04/82	Fiji	VK4RO	SSB	G14OPH	12/10/89	New Ireland	VK8ZLX	SSB
3D2AG	23/03/92	Rotuma Is	VK2QF	SSB	GJ4ICD	12/10/89	Jersey Is	VK4DDG	SSB
4S7AVR	29/03/89	Sri-Lanka	VK6KOW	SSB	GM4GDT	28/02/90	Scotland	VK6HK	CW
4X1IF	25/10/91	Israel	VK8AH	CW	GU2HML	01/11/89	Guernsey	VK4JH	
5B4AZ	25/10/89	Cyprus	VK8AH 1	CW	GW3LDH	12/10/89	Wales	VK8ZLX	SSB
5H1HK	04/04/89	Tanzania	VK8AH	CW	H44DX	26/04/79	Solomon Is.	VK8GB	SSB
5W1AU	05/04/82	West Samoa	VK4ZNC	SSB	HB0AHB	13/10/91	Liechtenstein	VK8PA	CW
5Z4CS	28/03/82	Kenya	VK8GB	SSB	HB9SV	03/01/92	Switzerland	VK8PA	SSB
6W1QC	12/11/90	Senegal	VK4BRG	SSB	HC5K	26/03/89	Ecuador	VK2MQ	SSB
6Y5FS	24/03/90	Jamaica	VK2BA	SSB	HI7PV	19/09/89	Haiti	VK2BA	SSB
7Q7JA	27/03/91	Malawi	VK6RO	CW	HI8WPC	02/04/89	Dominican Rep	VK2BA	SSB
8P6JW	18/04/89	Barbados	VK2OF	SSB	HK0/W6JKV	01/04/92	San Andreas Is	VK2OF	CW
8R1AH	02/04/89	Guyana	VK8RH		HK1JXV	19/03/90	Colombia	VK4ZNC	SSB
9H1BT	25/03/89	Malta	VK8RH		HL9WI	04/09/69	Korea	VK4ZAZ	AM
9K2ZR	03/04/92	Kuwait	VK6JO	CW	HP3XUH	25/01/89	Panama	VK4ZNC	SSB
9L1US	08/10/90	Serra Leone	VK4BRG	SSB	HR1WPK	02/04/90	Honduras	VK5RO	CW
9M2DQ	26/05/99	Malaysia West	VK6BE		HS1WR		Thailand		2
9M8STA	13/08/89	Malaysia East	VK8ZLX	SSB	HICL	15/02/91	Italy	VK4FP	SSB
9N1BMK	02/05/79	Nepal	VK8GB	SSB	IS0AGY	10/11/91	Sardinia	VK4FP	SSB
9Q5EE	06/04/91	Zaire	VK3OT	CW	J73PD	03/04/89	Dominica	VK4KJL	
9V1ES	17/11/89	Singapore	VK8ZLX	SSB	JAI4HS	22/01/56	Japan	VK4NG (SK)	AM
9Y4LL	10/04/82	Trinidad	VK8GB	SSB	JD1ADP	05/05/79	Ogasawara Is	VK8GB	SSB
A22BW	26/04/91	Botswana	VK6JU	CW	JD1YAA	31/03/84	Minami Torishima	VK8GB	SSB
A35JT	10/04/82	Tonga	VK4ZNC	SSB	JT1CO	28/09/91	Mongolia	VK6HK	SSB
A45ZM	04/04/90	U.A.E	VK8RH 1		KC6IN	23/03/80	East Caroline Is	VK8GB (V63)	SSB
AH8A	19/04/81	Am. Samos	VK2VC (KH8)	SSB	KC6SZ	14/10/79	Yap — W.Car.Ils	VK4JH	
BV2DO	30/08/91	Taiwan	VK6JO	CW	KG4SM	25/03/89	Guantanamo Bay	VK2QF	SSB
BY5RA	28/09/84	China	VK8GB	CW	KG6K7HIX	22/03/69	Guam	VK4ZAZ (KH2)	SSB
C21AA	20/12/70	Nauru	VK4ZRW (VK4IT)	SSB	KG6RO	24/09/78	Saipan	VK8GB (KH0)	SSB
C8ANY	21/04/92	Bahamas Is	VK2QF	CW	KHDAC	07/04/89	Mariana Is	VK4ZAZ	SSB
CE0DFL	24/04/90	Easter Is	VK4JJB	SSB	KH1/VK9NL	03/04/88	Howland Is	VK4TL	CW
CE3/KB6SL	14/10/90	Chile	VK4BRG	SSB	KH3AB	26/03/81	Johnston Is	VK8GB	SSB
CN8ST	20/10/91	Morocco	VK8RH		KH4AE	28/02/91	Midway Is	VK4BRG	SSB
C02KK	16/04/89	Cuba	VK2BA	CW	KH5/WGHTH	17/04/81	Jarvis/Palmyra	VK5RO	SSB
CR9AJ	24/09/78	Macau	VK8GB	SSB	KH6/W7ACS	26/08/47	Hawaii	VK5KL	AM
CT1LN	03/03/90	Portugal	VK4RO	SSB	KH7/KH6JEB	23/03/90	Kure Is	VK4KK 1	SSB
CU3/N6AMG	27/11/91	Azores	VK2QF	CW	KL7/W4ATN	13/03/79	Alaska	VK2KAY	SSB
CX4HS	16/04/92	Uruguay	VK4FP	SSB	KP2A	26/03/89	Am. Virgin Is	VK3OT	SSB
DL8HCZ	12/10/89	Germany	VK8GF	SSB	KP4AAN	13/04/81	Puerto Rico	VK2DDG	SSB
DU6/WB5LBJ	11/10/77	Philippines	VK8GB	SSB	KR6BU		Okinawa		3
EA8/G3JVL	02/11/89	Canary Is	VK8AH	SSB	KX6AF	20/03/58	Marshall Is	VK4NG (SK)	AM
EI8AS	12/10/89	Ireland	VK8ZLX	SSB	KZ5NW	04/03/79	Canal Zone	VK4RO	CW
EKOJA	20/04/92	Asiatic Russia	VK8ZLX (UA0)	SSB	LA3EQ	25/02/89	Norway	VK6WD	SSB
ES5PC	29/01/92	Estonia	VK6PA	SSB	LU8OB	28/04/58	Argentina	VK4NG (SK)	AM
FD9I	14/10/89	France	VK8ZLX	SSB	LX1SI	27/10/90	Luxembourg	VK8JO	CW
FK8AX	15/12/78	New Caledonia	VK3AKK 1	SSB	OA8ABT	23/10/89	Peru	VK8AH	SSB
FM5WD	11/04/90	Fr. Martinique	VK8ZLX	SSB	OE5PAM	01/03/91	Austria	VK6IQ	CW
FO0CI	13/03/92	Clipperton I	VK4DDC	SSB	OH1YP	25/02/89	Finland	VK6KXW	SSB
FO8DR	12/04/81	Fr. Polynesia	VK2BA	CW	OK1DIG	08/02/91	Czechoslovakia	VK8PA	
FW/WB5LKV	23/03/90	Wallis & Fortuna	VK4JJB	SSB	ON7YD	28/10/90	Belgium	VK6IQ	CW
FY5AU	30/03/89	French Guyana	VK4BRG	CW	OZ1LO	20/10/90	Denmark	VK4JH	
G4FJK	20/03/89	England	VK6KOW	SSB	P29GR	23/11/75	Papua N Guinea	VK4ZJB	SSB

Station	Date	Country	Claimed by	Mode	Station	Date	Country	Claimed by	Mode
P43AS	26/03/89	Aruba Is	VK4KJL	SSB	VR2BC	18/12/49	Fiji	VK2AH	SSB
PA0RDY	12/10/89	Netherlands	VK4ZJB	SSB	VR6JJ	13/03/93	Pitcairn Is	VK4BRG	CW
PBJT	02/03/89	Curacao/Bonaire	VK4PU	SSB	VS2DQ	19/04/58	Malaya	VK6ZAV	AM
PYOFF	26/03/92	Fernando/Norona	VK6PA	SSB	VS5DX	26/11/80	Brunei	VK8GB	SSB
PYSCC	20/04/91	Brazil	VK7IK	SSB	VS6HK	05/05/78	Hong Kong	VK4RO	SSB
PZ1AP	30/03/89	Sumatra	VK4BRG	SSB	VU2JPN	17/03/81	India	VK8GB	SSB
S21ZE	11/10/92	Bangladesh	VK8RH	SSB	W6PUZ	14/03/58	USA	VK4HD (SK)	AM
SM6PU	25/02/89	Sweden	VK6KXW	SSB	XE1FU	01/05/59	Mexico	VK3ALZ	AM
SV1DH	17/10/89	Greece	VK8AH	SSB	XF4L	14/04/89	Revilla Gigedo	VK2DF	SSB
T20AR	15/12/87	Tuvalu	VK2XJ	SSB	XU0UN	23/02/93	Cambodia	VK8AH	SSB
T32AB	15/03/82	Kiribati East	VK2DDG (VK4DDG)	SSB	Y8DX	01/05/79	Indonesia	VK4RO	SSB
T33JS	19/05/89	Banaba Is	VK4BRG	SSB	Y8JKM	01/11/76	New Hebrides	VK4ZSH	SSB
T3AZ	17/03/80	Kinabat West	VK4RO	SSB	Y07VY	21/10/91	Romania	VK8RH	
T70A	20/10/91	San Mar no	VK6JQ	CW	YS1ECB	06/04/84	El Salvador	VK2DDG (VK4DDG)	SSB
TG9AWS	28/03/89	Guatemala	VK2BA	SSB	YU3EA	03/03/91	Yugoslavia	VK6JQ	CW
TI2NA	26/03/81	Costa Rica	VK2DDG (VK4DDG)	SSB	YV5/DL3ZM	18/03/81	Venezuela	VK4RO	CW
TL8MB	03/04/91	Central Africa	VK6JQ	CW	ZA1ZJ	27/10/91	Albania	VK6JQ	CW
V31PC	19/04/89	Belize	VK4ZAZ	SSB	ZB0T	22/10/91	Gibraltar	VK8RH	
V51E	25/04/91	Namibia	VK6KXW	SSB	ZC4MK	31/10/90	Sov/Bases Cyprus	VK6RO	CW
VE7AQO	06/04/59	Canada	VK2ADE (VK4QM)	AM	ZD7BW	21/03/81	St. Helena Is	VK4TL	CW
VK0WW	10/12/72	Macquarie Is	VK2NN	SSB	ZD8TC	20/03/82	Ascension Is	VK4RO	CW
VK2BKE	05/01/75	Lord Howe Is	VK32NJ (VK3AKK)	SSB	ZF2DN	28/03/81	Caayan Is	VK2BA	CW
VK2BZ	05/12/88	Australia	VK7LZ	AM	ZK1WL	28/03/89	North Cook Is	VK2DF	CW
VK9NT	01/06/58	T. New Guinea	VK4ZAZ	SSB	ZK1WZ	28/03/89	South Cook Is	VK4ZAZ	SSB
VK9XK	29/11/51	Papua	VK4BJ	SSB	ZK2RS	29/12/82	Niue Is	VK2BA 1	SSB
VK9XT	10/03/80	Christmas Is	VK8GB	SSB	ZK3KY	13/10/90	Tokelau	VK4BRG	SSB
VK9ZM	13/01/89	Melish Reef	VK2BA 1	SSB	ZL2MF	21/12/47	New Zealand	VK5GF (SK)	AM
VK9ZM	22/11/78	Willis Is	VK2BNN (SK)	SSB	ZL4OY/C	19/06/83	Chatham Is	VK2BA	SSB
VK9ZNG	27/11/75	Norfolk Is	VK2ZRU	SSB	ZL9TPY	21/01/90	Auckland Is	VK2VC	SSB
VK9ZYX	22/11/81	Cocos Keeling Is	VK8GB	SSB	ZM8OY	10/12/85	Kermadec Is	VK4PU	SSB
VP1MT	13/04/79	Br Honduras	VK5RO	SSB	ZP6KDW	28/04/91	Paraguay	VK4BRG	CW
VP2MO	01/04/89	Montserrat	VK2BA	SSB	ZS6LN	18/05/81	South Africa	VK8WD	CW
VP2VGR	17/03/81	Br Virgin Is	VK3OT	CW	ZS9H	25/04/91	Walvis Bay	VK8KXW	SSB
VP5D	25/03/89	Turks/Ceicos	VK2QF	SSB					

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One never knows where Amateur Radio magazine may be found and the interest created by the presentation of the above First Worked list.

A few days ago I received a letter from Alan Woodacre VE2AEJ/VE3HX in which he refers me to an item in the QUA column of *The Canadian Amateur Radio Magazine* outlining the contact between VK2ADE and VE7AQO as possibly being the first VK-VE contact and suggesting that if earlier contacts were known, details should be forwarded to me.

Alan writes *I was active on 6 metres as VE7AQZ in the mid to late 1950s and remember hearing an awful lot of stations working like VE7AQO. He obviously put out a fine signal. Normally I could not hear like although I did work him once on aurora. I remember reading in the VHF column from an old QST or CQ in the late 1940s, about a report of a possible 6 metre QSO between VE7AEZ and a VK station. I remember the VE call as it was close to mine at the time. So time will tell if there are any developments from the message in the magazine.*

The local scene

There is little to report of any consequence. On six metres there are constant reports of contacts to JA from VK4 and VK8 stations. On 12/4 VK6AO, VK6KH, VK6WD and VK6YU had contact with Ross XU0UN. The grapevine told me VK6RO was also involved but this is unconfirmed.

The high pressure systems situated near the Great Australian Bight are placed too high into the continent to give assistance for the extension of 144 MHz propagation, let alone any higher bands. In Adelaide there is continuing local activity on 2304 MHz and 10 GHz.

From Japan

Now, although a little late, the May issue of CO ham radio from Japan, courtesy Graham VK6R0, lists the spread of contacts made by Japanese stations from 1/3 to 28/3. 5R8DP, 7Q7CM 7Q7JL, 7Q7RM, AH6LR, BV2DP, FK8DH, FK8GA, HL9UH, JA, KG6DX, KH6HH, KH6HI, LU8MBL, NI6EE/KH6, P29CW, P29JA, P29ZGD, PP5WL, PY2CD5, PY2DSC, PY2XW, T20AA, T30JH, V73SG, V85PB, VK2, VK3, VK4, VK5, VK6, VK7, VK8, VR6JJ, XU5DX, XU5DX, YC0UV0, ZL1TXB, ZP5HSB, ZP5JCY,

ZP5PT, and ZP5ZR, a total of 21 countries! In addition, the following beacons were heard: 9M-TV, DX1HB/b, FR5SIX/b, KH6HI/b, KH6HME/b, P29BPL/b, PY2AA/b, PY2AA/b, PY2AMI/b, VK-TV, VK4BRG/b, VK8VF/b, VR6JJ/b, VS6SIX/b and ZL-TV. The above are not necessarily one off contacts, many are repeated time and again.

Included in the above are some good F2 contacts to 5R8, 7Q7, KH6, LU8, PY2, VR6 and ZP5. We certainly live on the wrong side of the equator! It will be interesting to see what is provided by the April listings.

News from Europe

Ted G4UPS advises that what appeared to be the first Es opening across the Atlantic occurred on 31/5 when HK1BDN worked into EA after 2200. On 3/6 VE1ZZ was heard calling CQ but no contacts. On 5/6 CT4KQ worked W1/VE1 from 1945. Ted worked VE1DXD on CW at 2142.

Leo EH8ACW from the Canary Islands is the only EA8 station with a six metre permit and worked into the UK on 1/6.

The Bosnia-Herzegovina prefix has changed from 4N4 to T95. The six metre band has been released for general use

in Greece but SV7 and SV8 stations count as SV. The first mention of activity from the island of Crete was from SV9ANJ but no reports of contacts into G.

Both Ted G4UPS and Geoff GJ4ICD report fantastic Es conditions for June with strong contacts to all parts of Europe and across the Atlantic to the USA and Canada. They also mention the two metre Es contacts to various countries. I am interested in a comment by Geoff made on 14/6 when he states *I am sure you can spot that once again there is a monthly repeat of the big "Es" opening, 12 May and then this almighty opening, for three days non stop, even through the night again... these conditions are really unbelievable, and I'll stick my neck out again and say that I believe that these conditions are Solar related, maybe dying sunspots or something, but the evidence is there (activity from the sun early May/June) even in the southern hemisphere these conditions exist in their summer, why?*

My comment is that such massive openings are not unusual during the early summer and, as he says, it occurs in the southern hemisphere too. What the UK and European operators are experiencing is just how widespread Es contacts can be and with immensely strong signals. Having been starved of six metre contacts for years, with the release of the band in so many countries within Es range, they are now confronted with some of the truths about the band that we have known for years; things like 1600 + km contacts at S9 from a station running 1 watt, stations with 1/4 wave whip antennas, indoor antennas, backscatter and short skip contacts, signals coming from all directions and so it goes on. Bear in mind that Australia wide contacts (VK4 to VK6) of around 4000 km are not uncommon, probably similar to working UK to eastern USA and Canada. Somewhat more difficult for us are those from VK6 to ZL at distances of around 6000 km, but they do occur. That's the fascination of six metres.

I have repeatedly said that, as the solar count for a particular cycle declines, then the degree of Es rises, peaking at the lowest point between cycles, hence the greatly increased occurrence of Es on two metres. I don't have to stick my neck out on that one because it has not been refuted and there is ample evidence to support the statement! New areas/stations to be granted permits or open recently are Jan Mayen Island JX3EX, Crete SV9, Dodecanese SV5, 4N4 is now T95, Ukraine UBSBW, Western Sahara SO1AB, Andorra C31HK, Ethiopia ET3DX, Madagascar 5R8DP, Madeira CT3FT, Belarus

UC2AA, Romania YO4BZC, San Marino T70A, Iraq Y11 (permit but no gear!), St Pierre and Miquelon FP1VE1KM. Expeditions to Tunisia 3V, August 1993, St Peter and St Paul Rocks, PYOS, Jan/Feb 1994.

I note that Geoff GJ4ICD has now worked 145 countries but would like to add JX, SV9, HA, 3V and Z31 to clean up what is available within the European sector. Maybe he will achieve those countries before he tires of the continual Es openings. Life for some amateurs must be a chore at times! How different from the hours/days VK stations listen to nothing but noise or a muted receiver while it scans six metres! Geoff has also notched up 599 grid squares. Oh well.

USA is busy

Emil Pocock W3EP writing QSTs *The World Above 50 MHz* said their Es season started early this year, 29 April in fact, with many openings throughout May.

A massive tropo opening occurred 2-4 June across the southeast USA with 1900 km contacts on 144 and 432 MHz. KM4ID in square EM93 used both bands for 1975 km contacts to N5FA in DM91. Condy NI4Z from EL38 in Orlando worked on bands up to 1296 MHz to WB5ULA and others in EM13, a distance of more than 1600 km. Two metres Es opened in the US on more than half a dozen days during June and many excellent contacts were made over distances to 2000 km.

Emil draws attention to the similar two metre Es conditions which existed in Europe during June, but particularly on 10/6 when G3FPK reported that Charlie E12FK worked 280 stations in 63 grids between 1640 and 2015 — that is more than a station per minute for more than three hours! His log listed I62 stations, DL 125, HB 26, HA 6, F 5, ON 1, OE 10, OK 26, OM 6, SP 32, and 9A 3. His best DX was 2250 km — typical of E-skip openings on both continents.

Es increased during June with Larry NOLL in EM09 reporting openings on all but five days, with around ten trans-Atlantic openings from the north-eastern stations and Canadian maritime provinces. CU1EZ in the Azores worked deep into the USA including a string of Texan stations, while CT4KQ in Portugal worked W1s and VE1s. Ted Collins G4UPS worked VE1XDX while VE1ZZ worked many EHs in Spain. These are all really long distance contacts.

The best openings to Europe were on 11-12/6 and lasted eight hours from 1835 to 0233. Emil W3EP writes Bob and Lefty Clement K1TOL were wakened by their propagation alarm just after 5 am local and were rewarded by working 9H, I, DL and S5 from 0925 to 1135. Bob's total for

ten hours shows 108 stations in 18 countries, including EH, EH6, EH8, F, G, GJ, GM, LX, OE, OK, ON, OX and OZ.

The VHF Contest which began at 1800 on 12/6 produced a flood of stations in the US, so many that they were obviously calling over the top of the European stations trying to get through in the DX window of 50.100 to 50.125 MHz. (Now I wonder where I would have heard that comment before! .5LP). Emil says that the European calling frequency is 50.200 and Europeans are used to filling the band to 50.300 and beyond when things get lively and sees no reason why US stations should not likewise spread out.

I am sure that all the above augurs well for the southern hemisphere summer period. For the next several years I am sure there will be increased Es activity on six metres, leading to a significant increase in two metre Es. Remember the massive Australia wide openings during December 1985 and 1988, right at the minima between Cycles 21 and 22? See Amateur Radio for March 1986 and 1987 for the maps I produced indicating the wide distribution of Es on two metres.

Many of you will be adding summer contacts to your log using Es on six metres, but remember to monitor 144.100 whenever you are on the band. If two metres opens, leave six metres and work what you can on two metres using brief contacts as the band generally does not stay open for hours as can six metres, sometimes the openings maybe as short as two minutes! One of the better indicators for two metres is strong short skip on six metres, eg VK3 opens to VK5. But don't hog the calling frequency of 144.100, spread out a bit, the other stations will find you because you won't be under someone else!

VK news is scarce this month, hence the inclusion of the list of first worked stations. Correspondence from a number of "old timers" regarding the list has been interesting in that there are snippets of information relating to their very early days on six metres. As space permits I would like to include this information for your reading and to ensure that it is recorded for posterity.

Closure

Closing with two thoughts for the month

- 1 So far nobody has invented an intelligence test to equal matrimony, and
2. The water problem is interesting. Will we run out of the stuff before we have a chance to pollute it completely?

73 from The Voice by the Lake

*PO Box 169 Menninga SA 5264

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WIA Divisional Bookshops

The following items are available from your Division's Bookshop
 (see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price		Ref	List Price
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Antennas Compendium Vol 3 — ARRL	BD295	\$20.00	Morse Code Tapes Set 1 5-10 WPM — ARRL	BD351	\$18.50
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Antenna Note Book WTB — ARRL	BD297	\$20.00	Morse Code Tapes Set 3 15-20 WPM — ARRL	BD353	\$18.50
Antennas for All Purposes 10	BD298	\$20.00	Morse Code Tapes Set 4 15-24 WPM — ARRL	BD354	\$18.50
Antennas 2nd Ed John Kraus — 1988	BD299	\$16.00	Morse Tapes 3.5" IBM Disk	BN189A	\$20.00
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HF Antennas for All Purposes — Mason	MT308	\$35.25	Amateur Radio Awards Books — RSGB	BD297	\$30.00
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Novice Amateur Notebook — ARRL	BD292	\$16.00	DARC Companion — How to Win Your First IARU	BD445	\$12.00
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Physical Design of Yagi — 1600 Disk	BD299	\$20.00	Location Map of Europe — ARRL	BD379	\$18.00
Physical Design of Yagi Antennas — The Book	BD299	\$40.00	Log Book — ARRL — 8" x 11" Wire Bound	BD292	\$19.95
Practical Antenna Handbook — Tap	BD295	\$40.00	Lore Band (Dixing — John Densmore	BD155	\$18.00
Practical Wave Antennas — RSGB	BD296	\$20.00	Operating Manual — ARRL — 4th Edition	BD192	\$38.00
Reflexion Loss Minimization — ARRL	BD298	\$20.00	Operating Manual — RSGB	BD355	\$17.00
Reference Data for Engineers and Architects 5.25" IBM	BD294	\$20.00	Principles of Modern Radio	BD246	\$14.00
Reference Transmission Lines and Antennas — ARRL	BD296	\$40.00	Principles of the Wavelet Transform — ARRL	BD235	\$8.00
Simple Low Cost Wave Antennas	BD298	\$20.00	Principles Map of the World — RSGB (Illustrated)	BD297	\$20.00
Smith Chart Expanded Scale PK of 10	BD293	\$5.60	RTTY Today — A Guide to Amateur Radiotelegraphy	BD203	\$18.00
Smith Chart Standard Scale 1000 Ohm Capacitor Pack of 10	BD294	\$5.60	RTTY User's Programming Handbook	BD212	\$19.95
Smith Charts Stand Scale 1 SFT Cover PK of 10	BD295	\$5.60	The Complete Grid — NWWA	BD194	\$25.00
The Antenna Handbook — ARRL — 9th edition	BD290	\$5.60	Transmitter Hunting	BD232	\$43.00
The Easy VHF Antenna Handbook	BD292	\$40.00	World Grid Locator ARRL — (Maidenhead Locator) — ARRL	BD197	\$19.00
Transmission Line Transformers — ARRL	BD297	\$20.00	PACKET		
VHF/UHF Antenna Handbook — 8th — 1990	BD294	\$20.00	AZ 25 1/2 Layer Protocol — ARRL	BD178	\$16.00
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Model By CRRA — ARRL	BD298	\$10.50	Satellite Antennae — 1992 Edition — ARRL	BD180	\$23.00
SOS At Midnight — ARRL	BD299	\$10.50	Satellite Experimenters' Handbook	BD177	\$42.00
HANDBOOKS			Space Almanac — ARRL	BD239	\$52.00
ARRL Handbook — 1993	BD249	\$62.95	Weather Satellite Handbook Software 5.25" IBM Disk	BD234	\$42.00
Electrical Safety Book — ARRL	BD251	\$32.00	Weather Satellite Handbook Software 3.5" IBM Disk	BD235	\$62.00
Mobile Radio Handbook	MF133	\$32.95			
Motorola RF Device Data — 2 Volumes	BD247	\$32.95	VHF/UHF/MICROWAVE		
Radio Communication Handbook — RSGB	BD256	\$54.00	ARL 1991 VHF Amateur Radio — QST	BD216	\$17.00
Practical Antenna Handbook Operators — Swindon — 1991	BD257	\$54.00	Instrumental VHF Guide — GJUNK — RSGB	BD358	\$14.00
Space Radio Handbook — QN444A — RSGB	BD249	\$32.95	Microwave Handbook Vol 2 — RSGB	BD216	\$37.00
Wireless Radio TV Handbooks	BD250	\$40.00	Microwave Update Conference 1987 — ARRL	BD457	\$37.00
HISTORY			Microwave Update Conference 1988 — ARRL	BD458	\$37.00
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50 Years of HF — ARRL — 1988	BD199	\$8.00	Microwave Update Conference 1990 — ARRL	BD183	\$17.00
Big Blue — History of the ARRL — John Kraus 1986	BD203	\$8.00	Microwave Update Conference 1991 — ARRL	BD321	\$24.00
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Aeronautical Corr Design & Application Handbook	BD235	\$72.00	VHF West Coast Conference 1989 — ARRL	BD445	\$25.00
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All orders must be accompanied by a remittance.

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HF Predictions

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 µV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 µV in 50 Ohms at the receiver antenna input. The table below relates these figures to the

amateur S-point "standard" where S9 is 50 µV at the receiver's input and the S-meter scale is 6 dB per S-point.

µV in 50 ohms	S-points	dB(µV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT

Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland

VK SOUTH Southern-NSW, VK3, VK5 and VK7

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 52.3. The predicted sunspot numbers for October and November are 49.8 and 45.3 respectively.

VK EAST AFRICA

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 10.0	5.8	8.0	4	-16	-38			
2 10.0	7.7	2	-8	-21				
3 10.4	5.8	8.0	1	-6	-17	-35		
4 14.1	1 10.7	1	1	-4	15	-28		
5 19.6	5 15.1	-1	5	4	0	-9		
6 21.5	5 15.8	-2	5	5	1	-5		
7 21.3	5 16.0	-2	5	5	1	-5		
8 19.5	8 14.2	0	5	4	-1	-10		
9 18.0	8 14.2	3	6	2	-5	-15		
10 15.9	7 12.6	5	5	0	-11	-25		
11 14.0	8 11.1	8	3	3	-5	-20	-36	
12 12.5	9 9.9	8	0	-12	-30			
13 11.5	13 9.9	9	-3	-25				
14 10.9	16 9.6	10	-2	-25				
15 10.5	25 8.3	11	-10	-30				
16 10.3	28 8.0	11	-11	-33				
17 10.1	29 7.5	10	-13	-36				
18 9.5	31 7.0	7	-19					
19 9.0	31 6.7	4	-24					
20 7.7	31 6.6	4	-17					
21 9.5	30 6.6	8	-20					
22 9.0	24 6.3	2	-23					
23 8.7	15 6.2	0	-23					
24 9.5	10 5.9	2	-15	-34				

VK EAST EUROPE L/P

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 11.9	12.1	4	6	5	0	-23		
2 10.7	12.7	7	7	-1	-11	-28		
3 10.4	12.7	7	7	-3	-15	-34		
4 10.8	10.8	14	7	4	-5	-20		
5 10.3	10.3	17	7.3	9	-7	-24		
6 11.2	24	8.1	15	-2	-19			
7 13.8	23	10.0	22	-3	-20			
8 13.8	22	11.9	24	5	-21			
9 12.4	15	5	14	5	-5	-22		
10 11.9	11.9	8	7	-2	-21	-39		
11 12.1	0	9.6	3	0	-6	-22	-38	
12 11.4	-6	9.0	0	-2	-9	-21	-37	
13 11.0	-14	8.7	-2	-2	-8	-20	-34	
14 10.8	-18	8.4	-1	-1	-7	-18	-32	
15 10.6	-24	8.2	-6	-4	-9	-20	-34	
16 9.9	7.8	-15	-13	-19	-31			
17 9.4	7.1	-21	-20	-27				
18 10.2	-37	7.7	13	-10	15	27		
19 12.7	-13	10.0	-7	-2	-5	-12	-29	
20 18.5	-12	12.6	-6	-1	-5	-13	-29	
21 18.8	-14	12.4	-6	1	0	-4	-12	
22 15.9	0	10.1	1	2	-1	-9	-19	
23 13.8	1	9.3	1	-3	-13	-26	-33	
24 12.9	2	8.7	4	1	6	-18	-33	

VK EAST MEDITERRANEAN

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 11.9	0	9.1	-3	-1	-10	-26		
2 12.1	4	8.0	0	-2	-10	-26	-56	
3 12.5	12	4.2	4	1	0	-5	-16	
4 12.2	20	5.8	21	10	14.5	10	11	
5 25.8	20	21	14	12	14	12	5	
6 25.9	6	21.2	-14	1	5	6	6	
7 25.1	8	20.4	-13	1	5	6	6	
8 25.0	8	19.0	-12	1	5	6	6	
9 21.9	7	18.5	-9	1	5	6	6	
10 20.1	9	18.0	-5	1	5	6	6	
11 18.4	11	14.5	10	1	7	1	-1	
12 18.9	14	13.4	15	12	5	5	-19	
13 19.9	18	12.6	21	13	4	-10	-25	
14 19.0	22	11.6	24	13	11	1	-18	
15 19.0	22	11.6	24	13	11	1	-18	
16 14.0	11.1	11.1	11	11	11	11	11	
17 13.9	11.1	11.1	11	11	11	11	11	
18 13.4	27	10.5	24	8	-7	-29		
19 13.4	29	9.1	19	1	-20			
20 13.0	30	8.0	12	-11	-34			
21 12.9	28	10.0	23	8	-5	-27		
22 12.9	27	11.1	22	13	11	11	-20	
23 12.8	17	9.9	15	6	7	-25		
24 12.9	21	13.9	11	11	10	8	-17	

VK EAST ASIA

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 26.6	12 22.0	13	19	18	15	10		
2 27.7	12 20.7	13	18	15	15	10		
3 27.1	21 21.1	11	18	15	15	10		
4 27.3	22 22.6	12	19	18	15	10		
5 27.2	13 21.6	14	20	19	16	10		
6 24.0	16 20.2	29	27	22	14	5		
7 25.8	14 20.4	21	23	21	15	8		
8 24.0	20 20.2	29	27	22	14	5		
9 22.7	20 19.9	39	35	24	14	2		
10 21.2	18 19.8	39	20	21	9	-4		
11 19.9	22 15.8	38	27	17	4	11		
12 19.0	22 15.1	37	25	14	0	-16		
13 17.8	23 14.1	35	22	10	7	-25		
14 16.3	24 13.0	31	18	2	17	-38		
15 15.1	24 11.9	28	15	1	27	-32		
16 14.2	25 11.1	25	8	11	35	-37		
17 12.7	26 9.9	18	4	-25				
18 10.8	27 8.3	7	-2					
19 11.1	27 8.6	9	18					
20 11.9	27 9.1	15	-10	-33				
21 17.2	23 12.3	29	26	6	9	-27		
22 16.1	16 12.1	29	26	15	7	-27		
23 26.4	14 21.2	20	23	21	16	10		
24 13.1	13 21.5	16	20	19	15	9		

VK EAST SOUTH PACIFIC

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 27.5	24	34	35	26	22			
2 23.3	24	22.8	34	35	33	28		
3 27.3	24	22.5	35	33	32	28		
4 27.0	25	30	37	37	34	28		
5 26.1	26	21	40	36	34	28		
6 24.5	26	19.6	44	40	35	27		
7 22.7	30	18.0	46	40	34	26		
8 20.8	32	16.5	46	36	31	20		
9 18.9	34	15.0	46	36	27	15		
10 17.4	34	14.4	44	31	23	9		
11 15.3	36	12.9	42	31	19	4	11	
12 15.2	37	12.0	40	27	15	-18		
13 14.2	38	11.2	38	23	10	7	-26	
14 13.5	39	10.5	36	21	6	-12	-32	
15 12.9	40	10.1	35	18	3	16	-37	
16 12.9	40	9.9	35	18	3	26	-37	
17 10.4	42	8.0	5	-15				
18 11.0	42	8.4	28	8	-9	34		
19 14.6	36	11.0	37	24	11	5	22	
20 18.9	29	15.3	39	33	26	16	4	27
21 24.0	26	18.8	39	36	31	24	13	37
22 26.0	26	20.5	36	35	27	20	22	37
23 26.7	24	21.7	35	36	32	27	21	37
24 27.1	24	22.4	34	35	32	28	21	37

VK EAST USA/CARIBBEAN

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1 25.7	8	21.7	4	7	1	-10	-26	
2 23.4	10	18.5	3	11	1	-11	-24	
3 24.3	12	18.5	3	13	3	10	4	
4 23.4	14	14.4	18	14	8	0	-12	
5 17.0	18	13.5	22	15	12	5	-16	
6 17.0	23	12.5	27	16	12	5	-16	
7 17.0	23	12.5	27	17	11	7	-16	
8 17.0	23	12.5	27	17	11	7	-16	
9 17.0</								

VK SOUTH AFRICA

LTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5	LTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5	LTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5
1	19.5	13	8.1	8	-7	-25	-	-	1	12.9	7	9.2	7	-1	-12	-25	1	10.8	11	7.5	2	-6	-14	-28	-	
2	11.0	9	8.4	7	-4	-10	-38	-	2	12.4	9	9.4	3	-1	-2	-23	2	10.2	11	7.2	1	-1	-10	-34	18	
3	14.8	10	11.7	10	-5	-1	-14	30	3	16.7	3	13.2	0	4	1	1	5	18	3	9.7	4	6.9	1	10	23	
4	20.4	10	15.3	10	-5	-1	-2	-	4	22.6	4	18.2	4	-1	-1	-2	4	9.3	3	6.7	1	13	26	29		
5	16.9	5	19.9	5	-2	-	-	-	5	24.5	5	20.4	-11	-1	-1	-2	5	5.3	2	6.8	0	1	13	27		
6	22.9	7	16.6	3	-9	-9	5	2	6	24.3	5	20.1	13	1	5	5	1	9.1	1	7	5	3	11	27		
7	22.8	7	16.4	2	-9	-8	4	-2	7	23.9	5	19.6	13	1	2	5	4	0	7	12.1	9	1	1	-1	-34	
8	22.0	7	15.7	3	-9	-8	3	-4	8	23.1	5	18.7	-10	2	2	5	4	0	8	14.6	14	11.0	15	8	3	18
9	20.6	8	14.5	6	-10	-1	-6	-	9	21.5	5	17.2	4	-1	-1	-2	5	16.8	14	12.6	17	11	8	8	-1	-34
10	18.5	9	11.6	9	-9	-9	-	-	10	22.5	6	13.6	8	-3	-3	-17	10	16.0	12	10.9	14	8	1	11	-1	-34
11	16.5	11	8.5	1	-10	-25	-	-	11	17.2	5	12.0	10	6	1	14	1	11	15.6	0	8.5	1	1	11	24	
12	14.5	11	10.1	11	-5	-4	-2	32	12	15.2	10	12.0	10	6	1	14	1	12	12.0	0	8.4	1	1	11	26	
13	12.6	14	8.9	12	-8	-12	-	-	13	13.5	14	10.7	13	3	-6	-26	13	11.3	7	7.6	2	-5	-13	-26	-	
14	11.5	18	8.0	11	-5	-21	-	-	14	12.5	20	9.9	15	0	-15	-37	14	10.7	-15	7.2	4	6	12	25		
15	10.9	24	7.5	12	-9	-29	-	-	15	11.8	24	9.3	15	3	22	-	15	10.2	24	7.0	6	7	14	25		
16	10.4	27	7.0	10	-1	-35	-	-	16	12.2	28	8.5	14	-2	-2	-26	16	10.0	35	6.5	-1	-2	-29	35		
17	10.0	29	7.0	9	-16	-	-	-	17	11.2	29	8.8	14	-9	-30	-	18	9.2	6.4	24	22	-	-	-		
18	9.7	30	8.8	7	19	-	-	-	18	11.0	29	8.6	14	-9	-30	-	19	9.8	7.0	23	22	28	-	-		
19	9.3	30	5.6	4	23	-	-	-	19	10.4	28	8.0	10	15	36	-	21	11.8	19	8.5	15	8	17	28		
20	9.3	30	8.7	4	24	-	-	-	20	9.8	29	7.5	6	12	35	-	22	11.3	19	8.5	15	8	17	28		
21	10.1	30	7.0	9	15	-39	-	-	21	10.6	29	8.1	12	12	35	-	23	12.0	19	8.5	15	8	17	28		
22	9.6	29	8.0	8	-1	-	-	-	22	10.9	29	8.0	12	9	10	33	-	24	12.4	13	8.5	14	7	4	17	
23	2.5	6.7	4	21	-	-	-	-	23	12.5	29	9.7	11	11	11	32	-	25	12.4	13	8.5	14	7	4	17	
24	10.2	17	7.4	6	12	32	-	-	24	14.4	17	11.1	17	9	-1	-16	-34	24	11.5	13	8.0	4	-5	10	22	

VK SOUTH ASIA

JTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5	JTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5	JTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5
1	10	17.7	9	19	13	11	5	-3	1	25.0	8	16.7	-3	7	10	-	1	23.8	11	19.4	13	17	14	1	-	
2	20	9	18.2	7	12	10	5	-5	2	24.9	10	20.0	4	12	13	10	5	2	24.1	11	20.0	13	17	15	1	-
3	21.9	9	18.2	7	12	10	5	-5	3	22.0	13	17.4	2	15	14	8	1	23.4	11	18.2	14	17	15	10	-	
4	21.9	9	18.7	7	12	10	5	-5	4	22.5	15	15.7	1	17	4	-4	-	4	24.2	11	20.2	16	18	15	10	-
5	21.8	10	18.1	8	11	10	5	-3	5	18.3	19	15.5	24	19	12	11	-1	5	23.7	11	18.1	25	19	11	11	-
6	21.5	11	17.6	11	14	11	4	-4	6	17.5	22	13.8	29	21	12	11	-1	6	23.7	11	18.1	25	19	11	11	-
7	20.8	12	16.9	14	15	11	3	-6	7	16.6	24	12.3	30	20	9	5	21	7	21.9	17	17.5	30	25	19	11	-
8	19.3	14	15.5	19	16	10	1	-13	9	15.8	26	12.4	30	18	7	9	-26	9	19.9	20	15.8	33	25	16	4	-
9	19.3	20	14.0	25	18	7	-2	-25	9	14.9	27	11.6	29	16	3	14	-34	9	17.7	23	14.0	33	22	11	4	-
10	18.9	21	13.2	22	16	6	-11	-35	10	15.2	28	11.6	29	16	3	14	-34	10	15.8	25	12.5	31	22	11	4	-
11	14.1	22	11.2	22	16	5	-14	-25	11	12.0	30	9.2	21	-	-	-	-	11	14.1	27	11	-	-	-	-	-
12	12.7	24	10.1	16	5	-8	-28	-	12	12.1	26	9.5	19	0	-19	-	12	13.2	29	10	4.2	5	10	-10	-33	
13	11.9	24	9.4	12	-14	-38	-	-	13	11.7	29	9.2	18	-2	-22	-	13	12.4	30	9.8	22	15	16	22	-	
14	11.2	25	8.9	7	21	-	-	-	14	11.5	29	9.0	14	-4	-22	-	14	11.7	31	9.2	19	-2	-22	-	-	
15	10.8	25	8.5	3	27	-	-	-	15	11.3	29	8.8	10	-5	-21	-	15	11.3	31	8.9	18	-4	-25	-	-	
16	10.3	25	8.1	0	26	-30	-	-	16	9.9	29	8.5	10	-9	-30	-	16	12.6	30	9.5	16	-5	15	27	-	
17	9.8	25	7.8	22	20	-31	-	-	17	9.5	29	8.2	10	-10	-31	-	18	12.6	30	9.5	16	-5	15	27	-	
18	9.8	22	7.2	22	20	-30	-	-	18	10.3	30	8.1	11	-13	-37	-	18	12.6	30	9.5	16	-5	15	27	-	
19	11.9	-17	8.1	-6	2	6	-14	-25	19	10.2	31	7.9	10	-13	-37	-	19	11.3	27	8.8	13	-1	-25	-	-	
20	15.1	-7	11.2	-10	2	-3	-8	-16	20	9.8	31	7.4	7	-20	-	20	10.4	28	8.1	8	19	-	-	-	-	
21	15.7	-5	11.0	-10	1	-2	-7	-15	21	9.1	32	7.0	3	-25	-	21	9.4	29	7.3	1	29	-	-	-	-	
22	14.1	-6	9.9	-6	1	-5	-11	-21	22	9.9	31	7.5	9	-17	-	22	10.0	28	7.7	5	22	-	-	-	-	
23	14.9	-6	9.8	-6	1	-5	-16	-29	23	10.1	31	7.8	11	-14	-38	-	23	13.0	26	10.1	7	21	18	-	-	
24	13.0	0	8.2	1	-2	-5	-22	-38	24	9.4	27	7.2	5	-20	-	24	11.9	23	9.2	5	12	18	20	-		

VK SOUTH MEDITERRANEAN

UTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5	UTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5	UTC	M-F	dbU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.2	20	7.7	7	-13	-33	-	-	2	12.5	13	20.3	18	20	19	14	7	2	23.1	8	18.3	-6	8	9	7	-3
2	10.5	14	8.1	8	-1	-1	-	-	3	22.6	15	15.5	13	10	5	-3	-18	3	23.2	15	15.5	17	1	1	1	-
3	14.4	14	12	11	13	-6	-3	-18	4	20.0	15	15.5	13	10	5	-3	-18	4	20.5	17	17.6	3	6	6	1	-
4	14.9	14	12	11	13	-6	-3	-18	5	22.5	19	17.0	8	12	10	5	-3	5	23.2	15	15.5	17	1	1	1	-
5	15.5	23	10	10	10	-5	-5	-3	6	18.5	17	15.5	13	10	5	-3	-18	6	23.2	15	15.5	17	1	1	1	-
6	15.5	23	10	10	10	-5	-5	-3	7	18.5	17	15.5	13	10	5	-3	-18	7	23.2	15	15.5	17	1	1	1	-
7	15.5	23	10	10	10	-5	-5	-3	8	18.5	17	15.5	13	10	5	-3	-18	8	23.2	15	15.5	17	1	1	1	-
8	15.5	23	10	10	10	-5	-5	-3	9	18.5	17	15.5	13	10	5	-3	-18	9	23.2							

HAMADS

TRADE ADS

- AMIDON FERROMAGNETIC CORES: For all RF applications. Send business size SASE for data/piece to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please .. 14 Boonyo Ave Kiama) Agencies at Geoff Wood Electronics, Sydney Webb Electronics, Albury, Assoc TV Service, Hobart Truscott Electron.c World, Melbourne.
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FOR SALE NSW

- DECEASED ESTATE VK2BDS. ICOM IC735 HF transvrx c/w mike manual and access \$1000; ICOM PS55 psu \$400, YAESU FT7B HF transvrx \$500, YAESU FL2000B HF linear \$1000. Else (047) 74 1084.
- YAESU FT-7 mobile HF transvrx (SN 81090459) incl mic power cable for 12 V mounting bracket & handbook \$350. ONO - YAESU FC-707 antenna tuner (SN 2FT90315) 80 M — 10 M (incl WARC bands) built-in SWR and power meter 50 Ω dummy load handbook \$200 ONO. Bruce VK2DEQ QTHR (063) 628 703 fax (063) 627 950

FOR SALE VIC

- Shack clearance — ICOM PS-15 20 amp PSU new \$300; H/B PSU 12 V 30 plus amps, but needs regulator \$50; TET LPQ-4 compact 40/10 m trap antenna, use indoors or out, new \$75; MFJ 704 low pass filter \$40; MFJ 260B 300 W dummy load \$40; HI MOUND HK 706 key \$25, YAESU SP-902 sprkr EC \$50. Ron VK3OM QTHR (059) 44 3019
- ICOM IC25A 2 metre handheld with charger, as new \$285, AEA half wave telescopic whip \$35. Ken VK3NJ (03) 561 4124
- ANTENNA Hy-gain model 204BA, four element 20 metre full sized beam, 9.7 dB gain, 25 dB front to back, with instruction manual, needs repair \$150 ONO. John VK3GF QTHR (055) 62 5545

FOR SALE QLD

- LAMBDA 80 amp 15 volt pls; 3BZ tx vgc with manual; RATCLIFFE rf and af signal generators, ELECTRONIC keyer; A & R 12 volt 6amp switchable bench pls; BIRD 43 wattmeter, dummy load, 3-30MHz and 3 vhf slugs; HI LINEAR and HV pcf components; VALVES 807, 6DQ5, 6DQ6, 5728, 813, 6146B, 2.5/300 with ceramic bases and anode caps, OLD MICROPHONES and headphones, 1921 GENUINE xtal set, 100W PHILIPS amplifier, 1937 AWA 5W amplifier, MARINA 60 txvrx, HOMEMADE 2x807 tx with Geloso vfo, WESTON LMS txvrx vgc; WESTON LM6 txvrx vgc, TX valves; 100W hf rx; RAD and hobbies 1941-1962; AR88 rx, FT100 txvrx, RAAF DC3 headset. All items price negotiable, valves half new price, will exchange all or any of the above for W.H.Y. "Doc" VK4CMY (076) 85 2167 AH.
- IC2HA Digitally controlled HF all band antenna tuner, brand new, in original box, fits directly to IC735 \$550 Charlie VK4BO QTHR (077) 79 1357 BH (077) 79 4301 AH
- VALVES transmitting, receiving, renovators, collectors, some unused, tested Octals, early and later types, rectifiers, sockets. Send s.a.e A4 envelope for latest increased list Ted VK4YG PO Box 245, Ravenshoe, QLD 4872 (070) 976 387

WANTED ACT

- MOBILE mount for Yaesu series one FT290R and Kenwood MC-50 or MC-60 microphone. Deane VK1DW (06) 288 5018 AH.

WANTED VIC

- MODERN 2 metre mobile rig, also 12 amp power supply. Ken VK3NJ (03) 561 4124.
- EMTRON EA7300 or 300A ATU Ron VK3OM QTHR (059) 44 3019

WANTED QLD

- SCHEMATIC diagrams for Collins 818T-IB aircraft txvrx. Photocopy ok if clearly readable. Note ARC-84 and ARC-102 are equivs. Cliff VK4QJ QTHR
- ORIGINAL or photocopy FLDX2000 amplifier manual pay costs incurred: HEATHKIT or YAESU monitor scope, MANUAL "bug" speed key, 1950s - 1960s ARRL handbooks, "Doc" VK4CMY (076) 85 2167, Vla PO Dalveen Qld 4374
- TEN-TEC Delta txvrx must be vgc with manual no mods. Will consider drake or Heath equivalent. Dick VK4GDR QTHR (07) 379 1600
- 800 MHz wide band fm tx or Rx R.900 AWA unit. John VK4TL QTHR (070) 96 8328.

WANTED SA

- FT107 in good cond w th or without inbuilt psu Dale VK5AFO QTHR (08) 391 2300.

MISCELLANEOUS

- PLEASE SEND your donation of QSL cards, old or new, to the Hon Curator of WIA QSL Collection, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350 Let us save something for the future.

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Radio Address Flysheet.**

Historical Book Review

Another in the series of brief reviews by Colin MacKinnon VK2DYM of books published over the years which deal with the history and technical development of radio and radar in Australia. Most were printed in limited numbers and are sometimes hard to find.

70 Years of Radio Tubes and Valves

Written by John W Stokes —

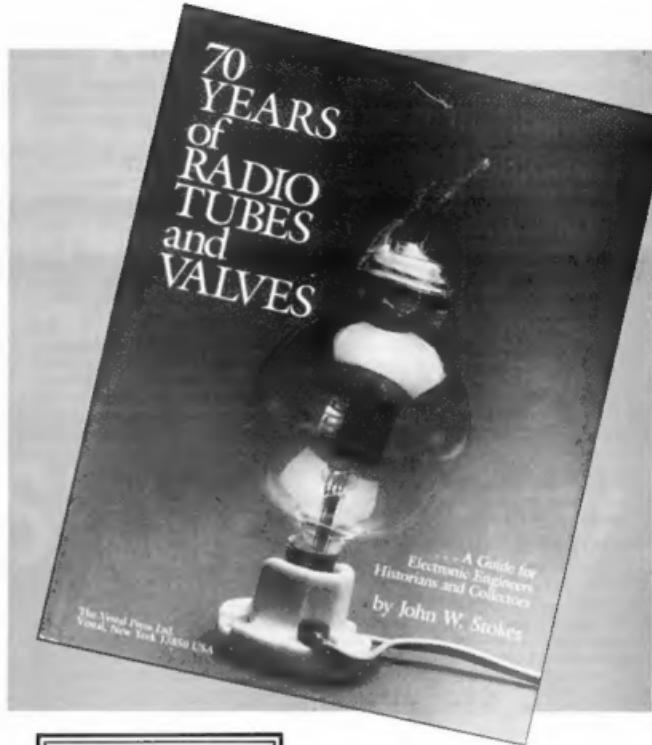
ISBN 0 911572 27

Subject — Technology and history of tubes and valves

John Stokes has produced a definitive technical catalogue of valves, or tubes if you prefer. It details the valves made by AWA and STC. Anyone interested in Australian radio technology will benefit from the many photos and details of valves used in Australian radios.

The book is A4 and has 248 pages. I believe it sold for around \$40.00

Collin VK2DYM



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Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

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When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

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VK7	GPO Box 371D Hobart Tas 7001
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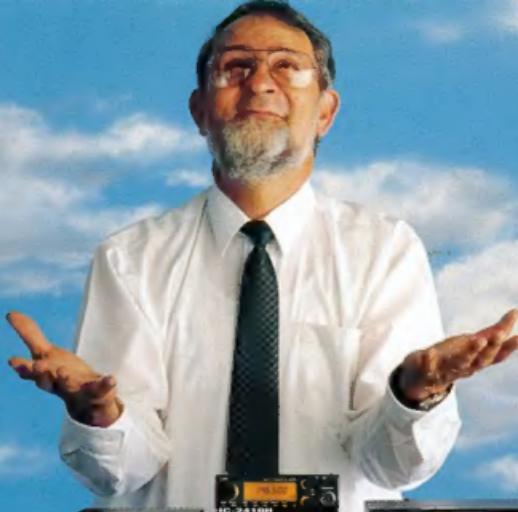
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